SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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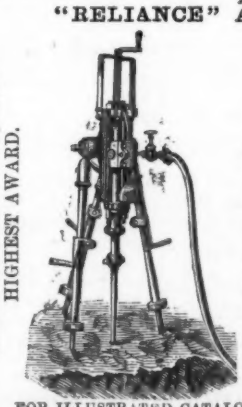

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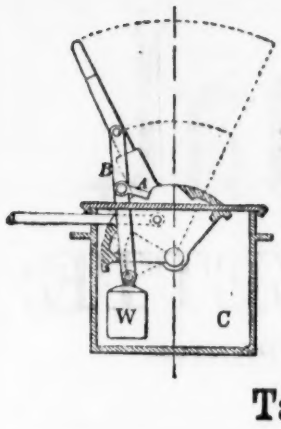

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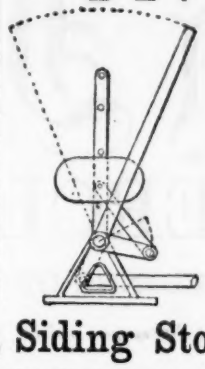

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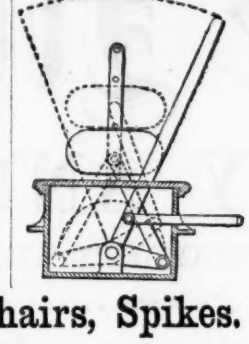

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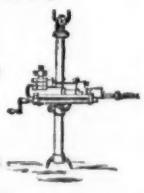

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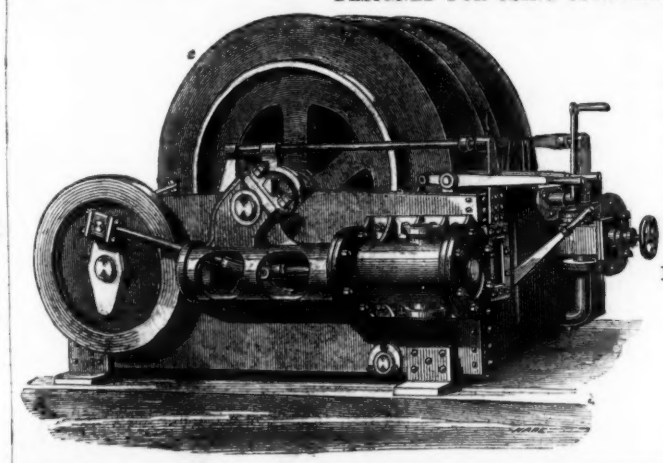

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The following letter has recently been received from the Ebbw Vale Company:— Ebbw Vale Works, Monmouthshire, July 5th, 1878.

GENTLEMEN,—I have much pleasure in stating that in the execution of your contract to drive, for the Ebbw Vale Steel, Coal, and Iron Company (Limited), a cross measure Drift from the Old Coal to the Rock Vein Coal, in the Glyn Pits, at Pontypool, you did so with dispatch, and to the entire satisfaction of all concerned. The distance driven was 453 yards in about 13 months. Yours faithfully, ROBERT JORDAN, Mining Engineer, Ebbw Vale Company's Collieries and Mines.

[The size of the above heading is 9 ft. by 13 ft.]

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Original Correspondence.

ON THE OCCURRENCE OF COPPER ORE IN THE WALLAROO DISTRICT, SOUTH AUSTRALIA.

SIR,—Some time ago I was requested to inspect and report upon a mine in this locality, and as the shaft was full of water to within a few feet of the surface, I was under the necessity of accepting such evidence as existed at or near the surface, having special regard to its geographical position in relation to known productive mines—"geologically," as being situate within the zone of ore-bearing schist in which adjacent mines yielded large quantities of copper ore, and "mineralogically," from the lode having been productive near to the surface. My report was submitted to a mining engineer in Cornwall, who took exception to a statement as to the importance of iron pyrites in a copper lode. His strictures were submitted to me, and I replied to them, and in acknowledging my reply my friend, a gentleman connected with mining in London, wrote:—

I may just tell you what Mr. —— (naming an eminent mining engineer) said of your letter—"Tell him if he were to amplify it into a letter to the *Mining Journal* it would be well worth publishing." I very much agree with him. Until I went to Australia I had never seen, nor did I so fully recognise the fact, that Nature works so regularly in the formation of the different kinds of ore.

The suggestion coming from an ordinary observer would not have influenced me, but coming, as it did, from one who has seen as much of mining as, perhaps, any man in the world, I am induced to submit the leading facts relating to the occurrence of copper ore in this locality, losing sight, as far as it may be, of the points of difference (as such) between my friendly critic, the mining engineer in Cornwall, and myself.

As in England—the Moonta, Hambly, Yelta, Paramatta, and some other mines are supposed to be in the precise locality of Wallaroo, Devon Consols, Kurilla, Duyrea, Doora, and others, I desire to guard the fact that I write in the locality in which the last-named mines are situate, the former being ten miles away, in entirely different strata, and the lodes running in an entirely different direction. The copper ore-bearing rock of this locality is mica schist, varying in colour from lead grey to black—that is in mass; but when the laminæ are separated and held in a strong light they appear of a bottle green colour. The schist, however, is not entirely uninterrupted; courses of gritty slate, dykes of felspar, and basins of elvan occur, striking the lodes from right to very acute angles. These, however, are not regular in their occurrence, direction, or contiguity. The "shelf" rock varies in depth from a few inches to 10 or 12 ft., and where fossiliferous limestone or white friable clay occur it is much deeper. Basins of strong red clay occur, overlying the shelf, which, when moistened, is used here in the building of miners' cottages and for rendering underground tanks watertight.

The dykes of chlorite occur generally at right angles to the lodes, and have a westerly dip. Cross-courses occur, not generally broad, nor do they contain such large masses of quartz and iron as those generally known in Cornwall. Those which are regarded as feeders to the lodes have regular walls, well coated with flookan, and dip from east to west at an angle of 45°. Strongly inclined cross-courses sometimes form "slicken sides" of considerable extent. The main lodes run from east to west, with more or less regularity. The dip is generally northward; but in some cases such lodes have assumed a vertical position a few fathoms below the surface, and after awhile appear to change their dip entirely. It is, however, not a matter of certainty whether the true walls so change, or whether the change of dip is not the dip of immense horses, or wedge-shaped masses of strata included within the true walls of the lodes themselves. Overlying the red clay and almost everywhere a crust of limestone occurs in compact masses from a few inches to 6 ft. in thickness, in large and small nodules, in pebbles (from the size of a large apple to a pea), white on the outside, but black, brown, or red in the centre. Although they are globular in form the dark centre is sometimes of angular form.

Within a distance of three miles from north to south, about 20 lodes have been found, although no deep exploratory cross-cuts of any length have been made for that purpose. The means used comprised shallow costeanings, and watching the debris dug out by a burrowing animal called the wombat. There can, I believe, be no doubt that cross-courses play a very important part in the formation and modes of occurrence of copper ore within lodes; cross-courses, with the lodes themselves, being channels through which metals from deep-seated sources pass up in a gaseous or aqueous condition, and combining with other metals and substances deposit themselves in the shape of metallic ores in zones near to the surface of the earth. The kinds and modes of occurrence of the copper ores of this locality may be ranged under the general terms sulphurets, oxides, muriates, and carbonates. But for the sake of brevity I shall distinguish these ores as "intermediate," inasmuch as their varieties are exceedingly numerous.

The order of occurrence of copper ores from the surface downwards is—1. Carbonates.—2. Muriates.—3. Oxides.—4. Sulphides. The CARBONATES occur from the very surface to the water line (usually about 40 to 50 ft. deep) in nodules, in pockets, along with friable rich gossan, as crystals (generally acicular) as moss, in cavities of nodular iron, not thicker than ordinary gold leaf, in clay covering the joints and faces like paint, on pebbles of limestone, as if they had been dipped in a strong solution of copper, and overlaying quartz, in forms as sharp, angular, and diversified, and almost as delicate and beautiful as frost on a window pane. The prevailing colour of these ores is green, although no compact or precious malachite is found. AZURITE, or blue carbonate of copper, occurs in small quantities, but not in highly polished crystals, as in some other parts of this colony. This ore, azurite, generally exists in white opaque clay and in the botryoidal form. In mass there is usually a large quantity of earthy matter mixed with the ore, but it is not uncommon to break and sample parcels containing from 25 to 35 per cent. of fine copper. This class of ore, that is, the carbonates of copper, is much in demand for mixing with sulphides of the metal for the smelting furnace.

The MURIATES occur at and a little below the water-line, but occasionally almost near to the surface, and even to a depth of 70 fms. below it. It must, however, be observed that the very shallow and very deep deposits are found either embedded in soft gossan (where the best crystals are found) or in cross veins and offshoots of the lodes. This ore is seldom found massive, but generally in crystals varying from 1 in. in width (in some rare cases, at the New Cornwall Mine) to the finest hair. It is found filling cavities and rents in quartz, felspar, and nodular pieces of iron—filling the joints in slate, and enveloping the slate stones. All compact silicious substances—such as flint, semi-opal, chalcedony, chalcedonic, citrine, and amatheystine quartz—seem to attract this ore of copper. Large masses of jagged and broken quartz also favour the occurrence of this kind of ore more than any other, but generally near to the surface.

The next in the order of occurrence are the OXIDES OF COPPER, red—massive, and in crystals; grey—massive, pure, or mixed with iron and silica; black—seldom in hard masses, but friable, or in soot-like powder, or covering lumps of malleable copper, and coating the softer and richer kinds of sulphurets. This class ranges from above the water level to over 100 fms. deep, but is never found very shallow or very deep, or apart from disturbances of the lode caused by contact with other veins or change of strata. The last of the series are the single and double SULPHIDES OF COPPER. These ores occur massive, but seldom pure, unless in contact with the disturbing and metamorphosing agencies before named. These ores when pure afford from 30 to 40 per cent. of copper. When found in mass they seldom afford more than 22 per cent. of that metal. The purer crystalline varieties lodged in fissures and offshoots from the veins sometimes yield in the heap 30 per cent. of copper, while individual specimens will assay 33 per cent. Distinct lines do not (usually) horizontally bound the ores above mentioned, although, as a general rule, the order of occurrence is regular enough. How regular and similar their occurrence would be, if exactly the same strata, width of vein, and all other identical conditions prevailed, it is not given us to know, but, as it is, satisfactory evidence usually exists to show that where any particular class of ore is found above or below what may be expected as its natural position in the vein, such deviation appears to be due to some distinct and assignable cause; gossan being apparently the most potent and effective, although cross veins no doubt exert a very important influence.

To the question—how and under what chemical, electric and physical conditions the great variety of "intermediate ores" were formed it is, I believe, impossible in the present state of our knowledge to furnish a positive and irrefutible explanation. But, judging from what we know to be possible in the laboratory of the chemist as to the ready decomposition of copper ore and the production of new forms, it would appear that all the upper deposits, or intermediates, are derived and formed from the lower—the sulphides of copper, by processes of decomposition, sublimation, electrolytic, and crystallographic action. We may also suspect that the last of the series known to us is due to cognate causes. The strong affinity existing between sulphur and iron and sulphur and copper is, of course, well known. It is, therefore, not presumptuous to suppose that those simple substances, once separate and distinct, united under various occult conditions to form ferruginous sulphide of copper, the lowest known deposits. Be that as it may, we have undeniable evidence of the action of certain laws; namely, in the occurrence of black oxide of copper (which is never a primary formation), and of the decomposition of other ores of copper, as well as that of the pure metal itself. This fact established, in connection with the readiness of the vapour of copper to combine with acids and gases, what I must now hasten to mention, as processes in the formation of different kinds of ore in copper lodes, would seem to be plain enough.

The ancient miners of Cornwall were wont to say that "mundic (iron pyrites) rides a good horse." The figure is apt, and the principle involved was in advance of the scientific research and nomenclature of that day. We witnessed in this country in the early stages of copper mining what they long previously saw. The "old men" of Cornwall found the oxidised ores near to the surface, and as they gradually descended they recognised the denser ores, until beds of mundic were reached which had yielded up their copper. Traces of copper ore still existing they delved on until the lower deposits of sulphide of copper were met with, and what the scientists would have expressed in more elegant but not more forcible terms, they indicated by the phrase "mundic rides a good horse."

With similar evidences before us in this country we accept the theory that from the decomposition of the sulphides of copper metal was given off in its most delicate and attenuated condition, and that in ascending through the fissures and veins it combined (1) with oxygen to form the "oxides"; (2) with muriatic acid to form the "muriates;" and (3) with carbonic acid to form the "carbonates" of copper. Oxygen is everywhere. Muriatic acid would be derived from the water (which in our mines is charged with salt to about the same extent as sea water), and carbonic acid from the decomposition of the calcareous carbonates deposited by the sea in past ages. Many exceptions may perchance be taken to the theory favoured by the foregoing facts, but the practical lesson to be learned seems to be this:—Wherever copper ores are found at or near the surface they most surely indicate deeper sources from whence they have been derived; and that until sulphide of copper is found by deep sinking it is highly presumptuous to conclude that the "find" is a thing of the surface, a mere "spue," and does not run deep.

THOMAS ANTHONY.

The Kurilla Mine, Yorke's Peninsula, South Australia.

CANADIAN MINING NOTES—No. XXVIII.

SIR,—A valuable invention has been made here by an enterprising artizan—it is a railway joint of the best, most simple, and most economical description. It is on the principle of a side-bar, and the patent has been taken out in England, in the States, and Canada. The ends of the rails are put together and two pieces of iron like the fish-joint are slipped in on each side on the principle of splicing a broken leg. The rails are made in a sort of groove, which holds the bars on each side. In order to do this a new system of making rails has been invented, and a new system of rolling rails. The invention appears to be perfect. The system adopted on the English Midland Railway is somewhat like it, but that is clumsy, and heavy, and expensive, and if they wish to take out a rail troublesome, whereas the new system does away with all these disadvantages.

When one looks at the immense number of tons of railway iron or steel that must be used to finish the Canada Pacific Railway, and the number of rail joints that must be used, no one can doubt that a simple and economical joint will be much more acceptable to railway companies than the present fish-plate, or the one in use on the Midland Railway.

New inventions in this country are difficult to get introduced, and on this continent it has become a by-word that inventors never make fortunes, but that the fortunes are made by those who have power enough to introduce them. Some large inventions may have been different, such, for instance, as the sewing machine and Fulton's introduction of the steamboat in 1807, but Goodeve's india-rubber patent was a lamentable instance of the brains of the inventor being used for another's benefit. That is not a new story; even Virgil has sung— Sic vos, non nobis ædificatis opis;

and Dickens, in "Little Dorrit," describes with his customary humour the difficulty experienced in procuring a patent in the Government offices. Perhaps England may have changed since Dickens wrote with regard to the manners and procedure of snobs in Government offices, as she has certainly changed with regard to the procedure, &c., in the Court of Chancery since "Bleak House" was published. Still, human nature is the same, and those who are most ignorant, if clothed with a little power, are generally the most haughty. One would suppose if this patent is good for anything it would be sought for and introduced, but it is hard work putting new teeth into old heads.

The way it is done on this continent is as follows:—First, the inventor has to prove his patent, that it is of value, that it is economical, that it is wanted and better than anything in use. That being done a man would naturally suppose the railway companies would take it up and use it. Such a supposition only arises from want of experience. Railway companies would not touch it. Now the second step is to form a "ring." This is done by getting the managers of some of the railways interested. There are so many patents and their time is so much taken up that they cannot afford to devote their time to an invention unless they are paid for it. "Forming the ring" is more difficult than inventing the patent. All things must be done in such a way that they will not appear to be done in that way but another way. Those who are paid in reality must receive no money themselves. The "ring" must be so strong that it will produce the effect, it must be so "honest" that it will court "the strictest investigation." Its virtue must be like—what shall I say—Cæsar's wife? No; that was not business. What *shall* I say? Ah! I have it. Its virtue must be like that of the directors of the Glasgow Bank. All, or almost all, should be men who have subscribed for church bells or organs, or church steeples, or some missionary enterprise to send blankets to Africa; the more teetotal temperance men you can get on the better, it gives tone to the "ring"; no women must be allowed in the "ring," for they would want their money too soon, and would burst it by some impatience or indiscretion. Then you must have some swell name of some swell man who has some way or other got talked about as an engineer or mechanical superintendent, or something of that kind. A sporting man, or a man that has a racehorse, or a military man, unless he has lost his honour, should on no account be allowed in the "ring." When the ring is formed the ring agree among themselves that they will use the patent on each of their roads. Then the next step is to get rid of the inventor. This is done by what is called the "freezing-out process." They dilly-dally and put on expense and keep the man on tenter-hooks till he is compelled by poverty to take a small sum of money. Then the ring have it all their own way, each railway immediately requires repairs, and the new invention is wanted. An iron smelter takes the contract for manufacturing the article, the railways pay for the article, the iron smelter pays the ring, and "all is lovely and the goose hangs high." The ring amass great wealth, and—

"Their bones,
When they have run their course and sleep in blessings,
They have a tomb of orphans tears wept on 'em!"

That is what is called "doing business." The railway companies, in fact, make money out of it, for the invention is not taken at all unless it is a good one, but the inventor gets little or nothing for the result of his own brain work.

Publishers in the United States are very much like those who belong to rings. They have no hesitation in taking the works of English authors and making fortunes out of them without paying a cent for the brain work, and—

"Their bones,
When they have run their course and sleep in blessings,
They have a tomb of orphans tears wept on 'em"

too, probably.

A SPLENDID IRON MINE.—I have information with regard to a magnificent iron mine on the north shore of Lake Superior. I send you the assay, and the ore speaks for itself. Assay of Amythist Iron Mine:—

Protoxide of iron	26·18
Sesquioxide of iron	58·76
Oxide of manganese	0·27
Titanic acid	Faint traces only
Phosphoric acid	—
Sulphuric acid	14·68
Total	99·89

With such ore any of your mining readers will be able to tell the amount of metallic iron that can be produced. The property consists of 224 acres, and is situated about 1½ mile from the north shore of Lake Superior. Water is deep, and large vessels can approach the shore. With a vessel of 600 tons the ore should be landed in Liverpool for about 10s. a ton, as such a vessel could come up the canals and go to the mine. The cost of mining and freight should not be more than 1*l*. When it got to Liverpool I suppose the commissions, &c., would eat up all the profit, but if an iron company took the ore there might be some money in it.

Toronto, July 7. BOURNONITE.

WHAT IS DYNAMITE?

SIR,—A correspondent in your last Journal raises the question—What is Dynamite? The answer is found in Nobel's specification, No. 1345, May 7, 1867, page 4, line 3, viz.:—Nitroglycerine absorbed in porous non-explosive substances. Also, in Nobel's advertisement and circular, addressed to the public and private individuals immediately following the reversal by the House of Lords of the judges' decision as to the validity of the patent, in which pains and penalties are threatened against anyone vending any compound "consisting of or containing nitroglycerine absorbed into any porous unexplosive substance." On Sept. 24, 1863, or nearly four years earlier than the date of Nobel's dynamite specification, he patented the production of explosive mixtures by heating gunpowder or other analogous substances in the manner and for the purposes therein set forth. In the body of the specification itself, page 3, lines 26 and 27, he states—"Nitroglycerine is to be mixed with or absorbed into ordinary gunpowder;" and, at lines 34 and 35, that "blasting powder may be mixed with sufficient nitroglycerine to render it damp at the surface, also that nitroglycerine may be made to surround nitrate of soda."

This specification, which lapsed in 1866, may be designated Nobel's lapsed patent, in which nitroglycerine is mixed with or absorbed in porous explosive substances, in contradistinction to Nobel's dynamite patent, in which nitroglycerine is mixed with or absorbed in porous non-explosive substances. The incorporation and sale of an explosive consisting of nitroglycerine mixed with or absorbed in porous explosive substances is, therefore, open to anyone.

SOMBRERO.

ROCK-DRILLS.

SIR,—The report of the last meeting at Dolcoath Mine, as it appears in the local newspapers, states that two different sorts of rock-drills have been at work there for some time. What have been the results of each? Any information would be valuable to those who, like myself, are inclined to introduce these machines into our mines.—*July* 29. MINE PROPRIETOR.

ROCK-BORING MACHINERY.

SIR,—In this wonderful age of science it is very painful to read from time to time the remarks of the different rivals in rock-boring machinery, more especially at a time when silence should at least have been observed. I allude to a letter which appeared in the Journal of July 12, and the reply thereto of July 19. The latter is excusable, but the former shows all the spleen of a vanquished opponent. Your readers, of whom I am one, know and appreciate your disinterested motives in noticing any new machinery likely to be of service to the public, and I am sure the public, as a body, are grateful for the information which you so frequently have given them. I think, if I may be allowed an opinion, that the lame way in which Messrs. Le Gros, Mayne, Leaver, and Co. have endeavoured to dispose of a subject for which they are mainly responsible throws grave doubts upon the truth of their statements. I, for one, would seriously advise them to turn their attention to business instead of black-balling their rival's machinery, for most mining men know that the Ingersoll drill is an expensive toy to play with.

Brompton, July 30. H. C. C.

PENSTRUTHAL—STEAM-PUMPS.

SIR,—In answer to "Weekly Reader" in last week's Journal, I beg to say anything he may or can write about steam-pumps or Cornish engines will not disturb the quietude of my stomach, and I should be most happy if I could say the same in some particular cases that have come under my notice where steam-pumps have been used. "Bile" is not the only thing that has risen, but water, covering the steam-pumps and causing a waste of thousands of pounds, through their insufficiency. "Weekly Reader" has a notion that he has discovered something in my advocating the superiority of the Cornish engine for mining purposes—that I have one for sale. On this I will satisfy "Weekly Reader's" curiosity quickly, by saying I never was individually the possessor of one. I have had them in my charge, but not for sale, and if "Weekly Reader" is in want of steam pumps and will kindly wait until I remove some water from over a "few" (not that I am the only person who have some for sale), I shall be most happy to supply him, and I guarantee they are nothing the worse for wear. This may satisfy your anti-bilious correspondent that I know something about steam-pumps as well as Cornish engines. When I replied to "Weekly Reader's" first letter I was not like an unthinking horse rushing into battle, but could illustrate and prove to a demonstrative certainty which defies "Weekly Reader" or his referee colliery owners to gainsay.

"Weekly Reader" inferred that it was out of place for me to say anything about this matter, having no interest in Penstruthal. I have yet to learn that he has any more than myself. If he is a shareholder he should have attended the meeting and have had a suitable resolution passed, which would have been circulated privately among his co-shareholders, particularly if he did not want his suggestions criticised through a public medium. I was candid enough to admit I had no direct interest in Penstruthal, but I claim as one of the mining community an interest, and as such am afraid if steam-pumps are introduced I can never hope the mines will be developed to that extent they are deserving, and thus prove a loss to such community.

I do not, as "Weekly Reader" so rashly intimated, wish or seek to annihilate the steam-pump, and if he read my letter without prejudging, he would see I was willing to allow them a position. I am not married to a Cornish engine, and should only be too glad to see introduced something less expensive that would do the same amount of work with such certainty, which I am sorry for "Weekly Reader" the steam-pumps cannot do. I have no occasion to enquire further into their merits or demerits, for I have an ocular demonstration every day.

"Weekly Reader" seeks to astonish me with some information I have long been acquainted with, and perhaps know a deal more about Great Wheal Friendship Mine and its machinery than he does himself. Water-motive is a different thing altogether from

steam-pumps, and where such facilities are afforded as are at Wheal Friendship, such machinery cannot fail to prove successful.
July 30. MINER.

IS IT RIGHT TO PAY ANY PURCHASE-MONEY FOR MINES?

SIR,—In sending a few last words in connection with the above indicated controversy I will at once acknowledge (in opposition to the laws of politeness) that I am not sorry that I fell into a mistake in thinking inferentially that A. Léon's censure was a general instead of a special or personal one. He himself, however, admits that the censure was directed to a kind of Janus, who, if he did not show several faces, presented various aliases or pseudonyms. I hope, therefore, that A. Léon will forgive the error on my part, and accept my thanks for his kind, courteous, and suggestive letter inserted in your last issue. I think we may now assume that the question "Is it Right to Pay Purchase-money for Mines" is settled in the affirmative. With respect to Mr. Hoskold's book on the "Valuation of Mines" being overlooked by me I may say, by way of explanation, that I have not been quite a regular reader of the *Mining Journal*—there has been an occasional break or interruption—and that may account for my having missed both advertisement and review. My mistake, already stated, has led to a most valuable and important suggestion from A. Léon—that the book ought to be translated into French; and it strikes me that Mr. Hoskold and his publishers cannot do better than put themselves in communication with A. Léon, with a view to the translation being effected. Possibly it may be well for some second person of literary competency to be associated with A. Léon in the execution of the work—so that as the translation may proceed the two may confer and read together, with a view that the translation should be as faithfully and effectively done as possible.

Undoubtedly the mining community is greatly indebted to Mr. Hoskold for the publication of his book, for although perfection in such a matter may not be attainable, yet mine agents and mining engineers who have good brains in their craniums will profit many times over the cost of the work by making it their vade mecum in their professional pursuits.

Allow me, Mr. Editor, to thank you also for kindly publishing the title and price of Mr. Hoskold's valuation book in last week's Journal; and I am fully persuaded that the controversy as conducted in your columns has been highly conducive to the cause of truth and righteousness in mining affairs. A LOOKER-ON.
West Gloucester, July 30.

HOW SOME MINING COMPANIES ARE CONDUCTED

SIR,—There need be no surprise at the annoyance that capitalists feel against the conduct of some managers of mines who may be said to have appropriated too much of their money. There are two mines in the North of England now worked, as it were, under one manager, who has 20*l.* per month salary from one of them; how much from the other I know not. The two mines have only eight working miners between them. Part of the month they are employed in one mine, and the other part in the other. It would be uncharitable to suppose that the full month's pay is charged to each mine. The expenses of mechanical working are going on the same as if 100 or more men were employed in opening up the mine. It is quite clear that these mines are worked for the benefit of the agents alone, who it may be care little or nothing for anybody else. I call such proceeding disreputable, and it should be exposed in the Journal. I do not, however, give names of mines or persons at present; I shall look out to see if the evil is corrected shortly; if not, you may expect full disclosures.—*July* 22. ONE WHO HATES INIQUITY.

MINING IN NORTH CARDIGANSHIRE.

SIR,—Considerable activity prevails amongst the mines in this district, notwithstanding the very low price of lead. The recent discoveries are opening up well. The valuable discovery of copper at Esgair-Fraith (Cambrian Mines) is not only holding out, but improving every fathom they lay open. At Blaen Caelan they have holed through to the shaft, and a fine course of lead ore is now laid open for stoping. At the South Cambrian they are about to erect a large water-wheel and other machinery, also to make a good road to the mine. At Bryn-yr-Afr they are pushing on the cross-cut to come under the very rich discovery of lead ore made some time back. All these mines are in nearly parallel lines on east and west lodes, proving that a highly productive channel of ground must exist running from north to south to the Plynlimmon mountains.

A new company have taken up the Moel Goch Mines formerly worked for lead ore, which was very rich for silver, and we hear of new companies for several other mines in the district. Monydd-Gorddu have just sold 40 tons of lead, which at anything like a fair price for the ore would have left a very handsome profit. With something more than a probability of a rise in the price of lead all the properties in this district will once more spring into activity. All that is now wanted is the construction of a light tramway from Llanfihangel Station so as it reduce the price of carriage, and with such a strong disposition on the part of the landlords to give a liberal assistance the wonder is that this is not done with iron at the present price and labour also very cheap, a very small capital would be sufficient, and the traffic, passenger, agricultural, and mining, would return a very fair dividend to the proprietors, and at the same time confer an immense boon upon the district. READER.

CORNISH MINE DIALLING.

SIR,—The letters of "Trigon" and myself in reply to your correspondent "I. L." seems to have disturbed his bile very much, and like a greedy dog surrounded by imaginary foes, he snaps and snarls at everything. I do not know who "Trigon" is, but I think he is well able to defend himself, and sustain his point without being waspish or offensive. "I. L." has evidently a good opinion of himself, and that bump called conceit which is irreparable from old age when it is not ballasted by wisdom, seems to be very largely developed. For his information I may say there are several methods of dialling, each sufficiently "accurate and scientific." It is well known that the German mode of dialling and plotting differs essentially from ours, but no one will deny that they are efficient diallers, or that their plans are correctly made. I have known several good surveyors, but they went about their work in very different ways, in short you will scarcely find two men adhering precisely to the same method, and yet there is a perfect correspondence in their conclusions. But I suppose "I. L." with his superior ability would say they are not "proper practicable and simple ways" for the only reason, that they do not adopt his style. The sorest point with our friend "I. L." is that Cornish agents depute others to do the dialling, and he is at a loss to find an explanation. On the part of some no doubt it is incompetency, but in many cases the duty is delegated to a professional, because in very large mines the managers' time can be better and more profitably employed. Besides this a regular dialler can make the survey quicker, and put the same on paper in a neater manner than a man who only dials occasionally, and has to attend to the multifareous duties devolving on a mine agent, distracting his attention, and interrupting him in his work.

If the "Eminent Mine Manager" is still alive he will not feel flattered that he has unwittingly furnished so many illustrations for "I. L." to spice his letters with. But possibly he may think that the facts adduced are so disturbed that they have no reference to himself, for surely a man who can dial as "I. L." inferentially admits, an intricate piece of dialling, can make his entries sufficiently intelligible, and not get into an "inextricale labyrinth" when transferring the work to paper. Rough hand sketches are often great assistance in such surveys as "I. L." refers to, but ordinarily all departures from the main line of the survey can be distinguished by a judicious use of the alphabet and minerals.

The dialler, however, has a worse thing than an underground maze to encounter—magnetic influences—rendering the work tedious and extremely difficult in such places as diagonal pumping-shafts, &c. There is a method known to some of the "fraternity" by which surveys under such conditions can be safely conducted, but, perhaps, according to "I. L.'s" views, is neither accurate nor scientific. I am sure no one will thank him more than myself if he will condescend to show us a more excellent way.

In conclusion, "I. L." treats us to a small dose of Lindley Murray, and shows how the laws of grammar are violated by spelling dialling with two els. Doctors differ, and so do lexicographers, but I think the majority spell dialling with two els; so, in spite of incurring the wrath of such a censor as "I. L.," I have dared to spell it in the old-fashioned way, choosing to follow authorities whose reputation is not of such mushroom growth as "I. L.'s." B. J.
Truro, July 30.

GREAT LAXEY MINING COMPANY.

SIR,—I have the pleasure to inform you that the strike at our mines has terminated, the Laxey men having resumed work this morning upon the printed conditions required by the directors.
London July 29. W. ALLEN, Sec.

PARYS COPPER CORPORATION.

SIR,—Will you allow me to correct an error in my letter as printed in last Saturday's Journal? The end of the third paragraph reads—"Parys, which 90 fms. deep requires a local staff costing 28*l.* 7s., in addition to the 14*l.* 14s. paid to the same agents by Morfa Du." This (as will be seen from the third and fourth line of the second paragraph) should be—"A local staff formerly costing 28*l.* 7s., and now 17*l.* 17s., in addition to the 14*l.* 14s.," &c. THOMAS BUSH.
Lavender Bank, Farningham, July 30.

PARYS COPPER CORPORATION (LIMITED).

SIR,—Mr. Thomas Bush calls upon me to retract certain statements made by me at the meeting held on the 18th inst. I have carefully read over my remarks, and I have nothing to retract. There is an old saying about giving rope enough, &c. Mr. Bush had plenty of rope given him at the meeting, and he effectually hung himself. He seems desirous of prolonging the sensation, which he evidently likes, but I decline to act as his public executioner. Your readers will be glad to hear Mr. Bush will "continue his exertions," though a captious person might not attach much value to a few minutes visit to a sett so extensive as Parys Mountain. In justice to a valuable servant, I say after many years experience of mining captains, that Capt. Mitchell is a capable, honest, and economical agent. A daw is not reckoned a religious bird because he keeps a-cawing from the steeple.—*July* 31. F. R. WILSON.

WHEAL PRUSSIA.

SIR,—It has been said that Wheal Prussia has, it is hoped, a good future before it. Now we all hope this of most mines, but let us quietly consider what are the prospects of this good future. That Wheal Prussia is in a good position for a mine there is no doubt, and the lode is a promising one, but to secure the good future hoped for a very considerable outlay must be met. Let the purchasers meet this necessary outlay in a manly way and I have no doubt there is a good future for them in this mine, and to point out this is the object of my writing you. That you cannot expect much from this mine without considerable outlay is obvious when it is considered that from the underlay of the tin lode it goes slap into Cardrew old mine, forming a junction with the lode there at the 70 fm. level. Now, long before you have reached that level you must expect to meet the water from Cardrew, for that mine is full of water considerably above the deep adit level. Therefore, the first thing to do is to pump out the water from that mine.

Then the bottom of Wheal Prussia, about the level of the deep adit, is very poor indeed, the bottom of shaft and all along the bottom stope producing for upwards of 30 fms. in length not more than 6 lbs. of black tin to the ton of stone, and hardly that, and that is the case all the way along where it has been worked more than 9 ft. below the 40. There is a little tin upwards in the western part, but not an end in the mine that will pay for driving. In the 45 east the lode is about the breadth of a finger, and no tin. In the deep adit driving towards the shaft, about 35 fms. behind it, the lode is also very poor, producing about 6 lbs. of black tin to the ton. That this lode if worked down to the bottom of Cardrew will prove a productive one I have no doubt, and this is the only way to secure the good future for Wheal Prussia hoped for, and I hope that success will be achieved by the present company.

To talk about the tin Capt. Tregay returned from there at the shallow levels is idle, as that has gone to market, and, unfortunately for him, at a very low price. There is some tin left in the backs there is no doubt, for the last two months Capt. Tregay worked there the engine had got out of order, and had only just been put to rights again when he was compelled to stop, so there should be an accumulation of about two months produce in the mine, and, perhaps a few pitches that will pay for working; but seeing that the tributers had 12s. and 13s. 4d. in 1*l.* tribute, and that most of them went in debt on that, the mine, whatever it may have been, cannot be very rich now. Other bunches of tin may be cut on exploring for them possibly, and in that there is hope.

I write this to guard people against being discouraged on pulling out the water and finding the bottom of the mine poor, as they will do. It is a pity if this mine cannot be properly carried out now, for the present company is undoubtedly quite strong enough to provide the 40,000*l.* or so it will be necessary to obtain for it, and being merchants will have the double advantage of sending in their own supplies at their own prices, which possibly may be considerably reduced for the advantage of outside shareholders.

Being alongside of West Peevor will, no doubt, be a great attraction, but West Peevor having a more moderate watershed to deal with can be worked more economically, and consequently with greater advantage.—*Old Broad-street, July* 28. SCRUTATOR.

LORDS' DUES—FOREIGN IMPORTATION.

SIR,—The most important question of royalties, or lords' dues, now being brought forward and freely commended upon in your columns by various persons interested in the development of the vast metallic wealth of this country, is deserving of the highest consideration at the hands of all mineral landholders. The continued free importation of enormous and increasing quantities of copper, copper ores, tin, and tin ores, likewise lead, into this country is truly annihilating our home mining industries, both capital and labour—the former to the extent of many millions sterling, and the latter to some hundreds of thousands, and families dependent on them for support. In every mineral county the cry is for lessors to take off the lords' dues entirely for a time, and to numerous mining companies this has been done, whilst others have reduced the royalties to 1-30th and 1-40th, others to 1-50th, 1-60th, 1-70th, 1-80th, and up to 1-100th. In many cases also a liberal contribution has been made in addition to royalty reductions, for either man-engines or rock-boring machinery, and it is somewhat satisfactory to find that generally throughout the country there is a disposition to assist the adventurers in mines, owing to the unprecedentedly great depression, mostly brought about by foreign free importation. What is to be the upshot of all this is asked, but no one seems inclined or to be able to answer. Year by year our prices for metals and minerals are going lower and lower, mines shutting up every week, and nothing but ruin staring us in the face, and yet there is not a member either in the House of Commons or Lords rises from his seat to say a word on the mineral industries of this country—nor even suggests a Royal Commission to enquire into why and how this fearful state of things has been brought about, and getting worse every year.

Why cannot we have the old duty on our imports put on of (say) 7*l.* per ton on metals and ores? Yes, why not? Who will it injure to have this done? On the other hand, see the benefit to our mineral home industries and labourers, instead of seeing thousands of miners now leaving our shores for foreign mines, to cut even more than ever against our home mines and miners. It would also go to assist us in knocking off taxes pressing hard upon us. Our metal and mineral industries of this country 25 years ago were prosperous—not so now. There were no Sheffields, or Birminghams, or Wolverhamptons in the United States then; there are now plenty of them, and deadly competing against this poor old country in everything, both at home and in every place where we used to supply goods so enormously. If the 29 nations having gone in strong for protection can the 30th, England, stand her ground any longer with her so-called free trade policy? This is the vital question now being worked out, and so far as we may now judge is bringing greater ruin and misery both to capital and labour, which has never before been seen or heard of in this country. Something must be done, and that soon. Our mine shareholders and managers must make up to their own interests in every county, and I am glad to see that Derbyshire is setting a good example in this respect during the last week. JUSTICE.

MINE DUES, &c.

SIR,—Your correspondent who spoke of the liberality of some of the lords in suspending dues "during pleasure," should not suppose that I did not appreciate such liberality. I do appreciate it; but what I meant to impress upon the lords is that lessees of mines should not be required to rely upon their will and pleasure in that way. No dues should be chargeable unless out of profits; no charge for land taken beyond its fair value; that buildings erected by the lessees or their assigns should be their property; that no rent should be charged during the actual working; and that the charges for the leases should be reduced at least 50 per cent. BONO.
July 31.

STRIKES.

SIR,—A friend has just informed me that the miners recently out on strike at the Great Laxey Mine have resumed work upon the directors' terms. I am pleased to hear that such is the case, because it shows the return of common sense in the men. I am also glad that the directors stuck to their own terms—not yielding to the unreasonable demands of the men, who kept themselves idle for a period of 17 weeks. What a loss to them; a loss which they can never recover—wasted time cannot be made good. I presume that many families underwent severe privations from the idleness of the men. I should like to see all employers, whose men without reason go out in that manner, to stand firm to their purpose. This would I think give the men time to see the inutility and folly of attempting to coerce their masters. The loss to the men and masters throughout the country by means of strikes is incalculable. It is an unmixed evil. A case justifying such a step is a very rare occurrence—I know not one. It is to be hoped that the men at Great Laxey, Devon Great Consols, and other mines have learned a lesson which they will never forget—the folly of their contention against their employers, and of the abandonment of work.
Truro, July 31. R. SYMONS.

OBTUSENESS PERSONIFIED.

SIR,—Your North Wales Correspondent, whom I cannot but regard as obtuseness personified, appears to be oblivious of the import of language. In reply to his accusation that I was the writer of the letter on the "Llanrwst District," which appeared in the Supplement to the Journal of June 21, I stated in terms unmistakeably plain that I did not write it or know who did, and yet he has the audacity to give to that statement the lie direct, thereby adding insult to injury. A writer of old confessed to having said in his haste "all men are liars." It would hardly be safe to say as much of even Welshmen themselves, who are proverbially prone to that weakness, much less of any respectable Englishman. Will your correspondent betray the candour to annul the vile aspersion, and disabuse our minds of the unpleasant reflection that he is oblivious of truth, or of the import of words, or both? But probably his obtuseness may still render him impervious to conviction, and insensible of the amenities of civilised life, unless you, Sir, will be good enough to add your testimony in a footnote to this corroboration of my assertion that I did not write the letter referred to. I will thank you to do so, as it is better that he should bear the imputation of rash imprudence than I of falsehood. ROBERT KNAPP.

CIRCUMSTANTIAL CHANGES.

SIR,—The world is full of changes—everything in nature and in human experience is in perrennial fluctuation. It is said in Scripture that "God raiseth up one and putteth down another;" although men, in general, do not recognise God in those changes. They are looked upon as chances—good or bad luck. Some men as fortunate, others as unfortunate, &c. The Divine hand is ignored, but if we take the Word as our guide we shall admit that the hand of God is in the rising and falling of men and nations. It is in temporal as in spiritual affairs that God "giveth increase." To some extent a man is said to create his own destiny in the world, by his management or mismanagement, but the ever ruling providence of God is in all things.

"God raiseth up one." We cannot tell why one man—perhaps a bad man—is lifted from the dunghill and made to "sit with princes" on account of his wealth. There have been many merchant princes, as they are called, men who, like Morrison, late of Fore-street, London, make millions by shopkeeping, &c., and like the late Sir Robert Peel, the cotton printer and M.P. In our county of Cornwall many men have been raised from very humble positions to wealth and respectability, not always from any superior talent or aptitude for business, but, as it were, by accident. But in some cases we do see that men acquire wealth from what is called shrewdness or cunning. But a cunning man is rarely honest and truthful. Jacob obtained his brother's birthright by falsehood and treachery. We will look at a few of the circumstantial changes without particular reference to the mode by which wealth was obtained. I see that in the ensuing week a sale is to take place at Pencalenick of the furniture of Mrs. Vivian, the late owner of numerous estates in St. Clement and other parishes, said to be worth about 100,000*l.*, all of which are lost through the failure of the Union Bank, Helston, of which she was the chief partner in succession of her late husband, Mr. John Vivian. He came to the possession of the estates by the decease of an uncle, who died as he was nearing our coast in returning from a foreign land. Previously to that Mr. Vivian was a solicitor practising at Helston, in partnership with Grylls and Co. His name was John Tippet. He afterwards dropped Tippet for Vivian. He married one of the daughters of Mr. Thomas Grylls, and sister of the late H. M. Grylls and Glynn Grylls. Mr. and Mr. Vivian enjoyed the estate for a period of about 50 or 60 years. There is one satisfaction for Mrs. Vivian left—that she will never come to want like the sufferers from the failures of the Glasgow and West of England Banks, by which hundreds of genteel families have been brought down to extreme poverty. Mr. T. S. Bolitho is now the owner of all the property of Mrs. Vivian, by taking off and paying the depositors of the Union Bank 15*s.* in 1*l.* Messrs. Bolitho are very rich. They have been growing rich for probably about 200 years. The Messrs. Williams, of Scorrier, began to be rich about 100 years ago, but most of their wealth has been acquired within the last 60 years, and is retained. There is as yet no waste in the family, what may happen hereafter we cannot tell.

The late Lord Arundell, of Wardour Castle, was the owner of 36 manors in Cornwall about the year 1800. Now his representatives hold only a part of one manor in the county. The late W. A. H. Arundell, Esq., of Kenegie and Lefton Park, was a large landowner, but he died in comparative poverty. Kenegie is now the property of Mr. T. S. Bolitho, as is also Trengwainton, late the residence of Sir Rose Price, Bart., whose family is gone into obscurity. His (Sir Rose's) income (very large) was, I believe, derived from a sugar plantation in the West Indies.

Mr. Beckford, late of Fonthill Abbey, was left with 100,000*l.* a year, and a million in cash, and yet he died in a humble lodging at Dawlish.

Mr. Trevanion, late of Carhayes Castle, which is now the property of Mr. J. M. Williams, is said to have had at one time an income of 10,000*l.* a year, but all his property has passed into other hands—a large portion into those of Mr. Williams, of Carhayes.

The late Marquis of Hastings wasted a large estate in extravagance.

The late Capt. Joseph Lyle was a native of St. Blazey, where his father was an agent at Pembroke Mine. He was of a speculative turn of mind; he set to work Wheal Fanny, now called Carn Brea Mines; North Basset, West Basset, Wheal Agar, Carvannel, Wheal

Grenville, South Grenville, Duffield, and several other mines, some of which became valuable, and he made considerable profits, and might have made more if he had sold his shares. He left about 45,000*l.* in land, which his executor and legatee wasted in a few years.

The late Capt. W. Davey, of Redruth, commenced life as a stamps boy at 2*s.* 6*d.* per month. He died rich, and so did his son, Mr. Stephen Davey, J.P. Another son, Mr. Richard Davey, now living at Bochym, near Helston, is also rich. East Wheal Rose, Wheal Buller, &c., yielded large profits to them.

The late Mr. Reuben Magor, of Redruth, made a fortune by brewing, mining, banking, &c. His son, Mr. J. P. Magor, is said to have left at his death 500,000*l.* in land, &c. How far that is correct I cannot say. Mr. Magor, of Lamellyn, is now enjoying the property.

The late Mr. Collan Harvey, the cooper, of St. Day, left, it is said, a similar amount, made by merchandise. He gave all to his son Richard, who died a few years ago in Devon. The late Mr. J. C. Lanyon, ironmonger, of Redruth, began on little, but left about, perhaps, 100,000*l.* Mr. Francis Pryor, originally a labouring miner, made about 80,000*l.* by mines, and spent it all, or nearly all, in drink.

The most remarkable of all is the case of Capt. W. Teague, of Treliske, near Truro, who from the position of a miner is raised to that of a large landowner and manager of several mines, his salaries from which amount to about 1000*l.* per annum. When the price of tin was high his profits from mines amounted to nearly 30,000*l.* per annum. At present Tincroft, of which he owns more than a third part, yields a small profit; Carn Brea, where he has a large interest, is about self-supporting; and Wheal Kitty, where he has also a large interest, is in about the same condition. He is manager and purser of those three mines. If tin were at the old high figure he would be in receipt of about 50,000*l.* a year profits.

The late Mr. George Simmons (the first George) was a steward for many years of the Beauchamp estates, in Gwennap, and numerous other parishes. He died possessed of about 1500 acres of freehold land, worth about 45,000*l.*, which he said he acquired by "marrying wives and rearing calves." He was married three times. He left a son (George two), who held the estates a few years. His grandson, George N. Simmons (George three), would have had the lands if he had not offended the old gentleman by marrying a lady who had no money. That act induced the old man to give the property by will to his granddaughters's son, Mr. George Carlyon, who afterwards took the additional name of "Simmons." Mr. G. C. Simmons has sold the whole of the land to Mr. M. H. Williams, the present High Sheriff of Cornwall, who has considerable property besides in the same locality.

Mr. Tonkin, the author of a history of Cornwall, in MS., who lived in St. Agnes about a century ago, was a wealthy man, but he died in poverty.

The Donnithorne family, also of St. Agnes, were rich, but there is no trace of them now. The Rev. John Wesley visited St. Agnes on Sept. 2, 1757. He says, "We found the great man, Mr. Donnithorne, was dead. His mother and sister sent to invite me to their house. After preaching I went thither, and was received into a comfortable lodging, with the most free and cordial affection. So in this place the knowledge of God has already travelled from the least unto the greatest." Mrs. Donnithorne was then 90 years of age, walked without a staff, read without spectacles, had not a wrinkle, and her understanding was entire, so said Mr. Wesley.

The late Dr. George Smith, Camborne, was a carpenter in early life. When he died, in 1869, he left about 50,000*l.* worth of property. His eldest son, Mr. W. B. Smith, J.P., purchased part of the Trevarno estate for 25,500*l.*, where he has taken up his residence, and which he is improving very considerably. The late Mr. C. Wallis, who died in December, 1826, became possessed of that estate by purchase from Lord Arundel about the year 1800. He was a lawyer, and had a large "bill of costs" against Lord Arundel, so that much money, it is said, did not pass for the property. It has been alleged that the lawyers ruined his lordship. Mr. Wallis was originally a poor youth of Madron, near Penzance. A maiden lady of that place, taking a fancy to him, put him to school, and brought him up to the law; but, ungrateful man, he married another—a young lady who had 200*l.* a year. He left land worth about 50,000*l.*, but his grandson wasted nearly all, and is dead.

The above are a few examples of the rising and falling of men and families. Many more might be given. S.

Meetings of Public Companies.

THE AUSTRALIAN MINING COMPANY.

The annual general meeting of shareholders was held at the Guildhall Tavern, on Monday,

Mr. HENRY COLLIER (the Chairman) presiding.

The SECRETARY read the notice calling the meeting.

The CHAIRMAN formally moved the adoption of the report and accounts. He said that all the information the directors possessed was embodied in the report; therefore, he would not detain the meeting by any comments, but he should be happy to answer any questions upon any point.

Mr. F. COLLIER (Deputy-Chairman) seconded the resolution.

Mr. THOMAS WHITE complained that the company did not seem to make progress in any shape or way, and they had got into a kind of rut, from which it seemed difficult to get out. He had no doubt that the directors were very energetic, and suggested that the business capacity of the directors should be devoted to trying to find out some new line of action for the company. Regarding the Port Augusta property, it was stated in the report that—"The railway works in the neighbourhood are proceeding rapidly, many building operations are being carried on, rents are improving, and a large quantity of wheat will be shipped from the port this year." There was no doubt Australia was a progressing country; the company had 20,000 acres of land which seemed to be worthless, and why could not they be disposed of and land purchased somewhere else, where it would be valuable, and show a profit in a few years time? At any rate it was a suggestion which he thought was worth the consideration of the board.

Mr. DAVIS said it was far from his wish to attribute blame to Mr. Davenport, the manager, or the directors, but it certainly was a disappointment to find the company in almost the same position as seven years ago. He should be averse to proceeding with the mining in the present low price of metals. He asked to what kind of tenants the lands had been leased—that was to say, to people who had been engaged in agricultural pursuits? He knew one company which let land to Germans who had been watchmakers and tailors. He asked how long it would be before the rent of the farms would increase, according to the conditions of the leases?

Mr. F. COLLIER, in reply, said the land was let to a very good class of tenants—he could not say whether they had been watchmakers or tailors—who were very industrious men, and, notwithstanding a year of drought they had managed by care and industry not only to pay up the rent but something more. As regarded the time when the leases expired, he believed it was on March 25, 1875. The directors had a good deal of correspondence with Mr. Davenport before deciding what should be done. Looking at the struggles the men were making and the outlay incurred in fencing and permanent improvements, and looking at the general position of the land and the colony, the board came to the conclusion that it was not practicable and would not be wise to increase all rents. As regarded the other matters alluded to, it was not quite correct to say that they had been going on from year to year for a great number of years in the same state. He reminded them that instead of meeting to declare a dividend, as on the present occasion, they had on some previous occasions not only not paid a dividend but had also made calls. The drought last year had been severe, and tried the resources of the tenants very much, and it is very satisfactory that they had come out of it so well as they have done. (Hear, hear.) They must remember that this was not originally a land company, but mining, in consequence of the low price of metals and the want of richness in the ores, came to an end, and the question arose as to what they should do with the land. First it was let to one tenant for grazing at a rent which was continually diminishing, and it was determined not to remain in that precarious state, but to let it to a number of persons, who would not make it exclusively wheat growing ground, but, from its nearness to Adelaide, would develope it for other purposes. He thought the land was very much improved, and was worked with skill, and the proof was notwithstanding the drought the company had got their rents. As to buying more land, the directors were the servants of the shareholders, and he reminded them that they had in byegone years had stormy meetings, at which the directors were prohibited from making any call at all. There was a distinct promise on the part of the directors that they would not go into anything involving a large outlay of capital. Of course, it was a matter for the shareholders to decide whether it was wise now to reconsider that determination. They had in Australia an excellent man in point of capacity, integrity, and judgment, and it might be a question whether they could not advantageously do what was suggested; but, if it were, the policy which had been forced upon the directors by the very strong feeling amongst the shareholders would have to be abandoned, and a call must be made. No doubt if a call had been made land might have been bought profitably. But that meant more capital. He went on to say that he believed eventually the olive planting, although a partial failure this year from the drought, would eventually prove of great value to the company. As regarded the Port Augusta property, they must let the development go on. He believed that eventually it would be a valuable property, considering its small area.

Mr. ROBINSON said it would be interesting and important to the shareholders to know how they stood with regard to unlimited liability?——The SOLICITOR said that under the charter the amount of the liability was limited to the amount of the shares. The shares were 20*l.*, of which 7*l.* 7*s.* 6*d.* had been paid up, and the liability per share was, therefore, 12*l.* 12*s.* 6*d.*

The resolution for the adoption of the report and accounts was then put and carried.——The retiring directors and auditors were re-elected, and the proceedings closed with a vote of thanks to Mr. Davenport (the company's agent in the colony), the Chairman, and directors. ——

CESENA SULPHUR COMPANY.

The annual general meeting of shareholders was held at the offices, Finsbury-circus, on Monday,—Mr. C. SCHIFF in the chair.

Mr. R. LARCHIN (secretary) read the notice calling the meeting.

The CHAIRMAN said: Gentlemen—Before I put to the vote the adoption of the report and accounts I wish to supplement them with a very few words. According to the promise we made the last time we met you, a report was circulated amongst the shareholders as far back as January, which gave some general information as to the year's working. That report has since been supplemented by another report from our managing director, Mr. Kossuth, in which he gives you in full detail the working of the year 1878. It is true that the result of the year's working has not been as satisfactory as we should have liked to have been able to announce to you, but this arises from events over which we had no control, the main facts being the great depression in the value of sulphur. For some years past, in fact ever since Mr. Kossuth undertook the management of your business, we have established a programme which we have faithfully and persistently continued, the result of which, so far as it can be criticised by business-like criticism, has resulted in our absolute satisfaction. In fact, what had we before; first, to avoid any falling in of the mine; secondly, to work the mine as cheaply as possible; and, thirdly, to have the produce of the mine in as complete a condition as possible, in order to fetch the highest possible price, and benefit for ourselves that part of the property which is generally taken advantage of by intermediaries, who purchase the mineral in an incomplete state of production, and take it away themselves, in order to render it into that shape or form which is most marketable, and which fetches the highest price. As to the first point—namely, as to putting the mine in a condition of security, we think we have done it. Mr. Kossuth has, in the most rational way possible, studied the whole aspect and the whole condition of our mine, and has now arrived at a point that he can predict beforehand how long the mine can keep in a certain position, and can ascertain in time to avoid any mishaps, which have been so disastrous to the property. As to the second point—namely, the working of the mine as cheaply as possible—it has been done with success. We have our own tramway, and we have an endless chain; altogether the whole mine has been put in such a position as to be dependent the least possible on human work. In this way we avoid strikes and we avoid irregularities, so to say, all our machinery working like clock-work. The third point, as to getting the stuff in as complete a state as possible, towards this we have put up our refinery, and now we have given the managing director the necessary instructions to put up a mill, and in this way we shall not only be able to get the best price, and go to the consumer direct with the produce of our property, but we shall also be able to take to ourselves those intermediary profits which dealers in this article used to make upon us. I do not know that I can say more. Provided the price of the article does get better, we shall have better results. As to the other points, I can only refer you again to all that has been so clearly and lucidly set before you in the report, and I shall ask Mr. Kossuth to give you any further explanation upon the working, and putting myself at your disposal for any observations or any questions you wish answered, I close my remarks upon the report. As to the accounts, gentlemen, you will notice that we compare the cost of the working with other years, and if we take into consideration the amount of gross weight which we have extracted from the mine, we can show that we have done it a little more cheaply than we have done in the previous year; and had it not been that this year we had to establish the endless chain, the advantages of which will only be forthcoming in the following year, I think we could show you a very noteworthy reduction in the cost of production. We have had to fight this year, as I said before, with a depression of market value of pure sulphur, and not only that but also to fight against the poverty of the yield of the mineral which was extracted. I am not in a position to assure you that the mineral will be much greater next year, but for all the symptoms which show themselves at present I think in the second part of the year we shall have results greatly improving our position. You will see that this year the directors have again waived all remuneration; they do not wish, and they do not intend, to take anything for their trouble, and work, and anxiety, which I need not assure you are very considerable, but they will continue to give their services for the benefit of the company gratuitously until they are in a position to declare a respectable dividend. (Hear, hear.) I shall ask Mr. Kossuth to add any further remarks on the subject, and I shall then put it to the meeting to accept the report and balance-sheet as presented.

Mr. KOSSUTH then said: Gentlemen—My two reports, dated respectively January and July this year, have given you a fair idea of the conditions in which our mines have been worked. These conditions were unfavourable under many respects, The selling prices of sulphur were still further depreciated, while on the other hand the difficulties which had arisen at Boratella Mine made it quite impossible to obtain any saving on cost of production. Notwithstanding these difficulties, had Boratella been worked alone a much larger net profit would have been left available for division. However, a considerable portion of the profits was absorbed by the loss sustained at Polenta, and the passivity experienced in working Borello. You are already aware of the fact that the former of these passive mines was closed in August last year; and I have no doubt that you all approve the decision which was taken to this effect. When I last had the pleasure of meeting you I explained that it would be impossible to give a correct opinion of the value of Polenta before the works then in hand had reached to certain points of the concession; these points having been reached, and mineral equally poor having been found at the same, it had become impossible to foretell how much longer the mine would be passive, and if ever it may become a source of profits. In these circumstances it was thought best not to invest any further profits in attempting to elicit value from a concession which proved to be a burden. No one could blame the persistent efforts made to work Polenta, though the result has been the painful conviction that for the present at least this property has no value. It would certainly have been inconsistent with the interests of this company to close the mine before this conviction had become justifiable, and certainly no one could have reasonably proposed that one of the three most important mining properties purchased should be left idle and unexplored, especially as the remains of extensive, though superficial works, clearly pointed to the existence of fertile mineral in the concession. It no doubt is most unfortunate that below the level of the natural outflow of waters in the valley, to which level the old workings had reached, only a narrow slip of fertile mineral should have existed, and that to the dip, and to right and to left, the seam should have been found considerably impoverished; but had it been otherwise, and had the mineral seam continued to be such as could be traced to the superficial old workings, the development of Polenta would have materially changed the conditions of this company, increasing net profits by not only leaving all the profits made at Boratella available, but adding an important share to same. At any rate, our mining property having to represent 250,000*l.* of preferred share capital, it would have been dealing lightly with a portion of this property, if all or a portion of what has been done at Polenta, had been left undone; while it would have been waste of profits to continue to invest the same in exploring all the large area of this concession after the most promising portion of it was found too poor to be worked profitably. The loss at Polenta during the first seven months of the year amounted to 1248*l.* 15*s.* 10*d.*, deducting from the expenditure the value of such moveable plant which would be made immediately available at the two other mines. I have no doubt that it will be a relief to the mind of all to know that we will no more be burdened by any loss at this mine, and that we have not renounced lightly our efforts to make good what was considered through a tradition in the country left by old workings as a valuable postion of this company's property. The loss at Borello was of a totally different description. Every mine in this world must pass through a period when the total value of the production obtained does not cover the sum total of all the expenses both of current and of permanent nature. It is generally found advisable to consider the expense of a permanent description as made to capital account, but this usual course could no more be followed by us, as we have no capital, and it would certainly not be advisable to increase our liabilities either consolidated or floating. It must, therefore, be fairly put down that Borello was worked at a loss, expenses having exceeded the value of the production. The passivity experienced during the year at Borello may be laid down in round numbers as 1800*l.* However, the mine had been worked up to yield 2030 tons of sulphur, which is nearly equal to a quarter of the quantity obtained from Boratella. Towards the end of the year the monthly budget of Borello showed a fair profit of about 200*l.* per month, but the same was insufficient to cover the total accumulated passivity of former months. At the beginning of this year Borello began to be alarmingly barren; the headings reached successively old workings in one direction and a barren plot in the other. This barren plot plot proved of such considerable width that it became useless to continne work at the first level, and though the same was calculated to last at least three years no considerable barren plots had been encountered; the works had to be carried to a second level at once. Also at this level the seam appeared alarmingly barren, so much so that the question was seriously raised whether it would be more advisable to discontinue works rather than increase the losses sustained since the beginning of the year. I must frankly admit that I strongly advised the continuation of the works, as no reason had yet been found which in my technical estimation would have justified our closing the mine, though I pointed out that the works to be made might in a possible, though not at all probable, hypothesis amount to loss of money. I am very glad to be able to state that my anticipations proved entirely correct, and since the last three weeks Borello is again in a rising condition; the production, which had been reduced from 300 tons monthly to 30 tons, is again fast increasing, and at the present day it amounts to 6½ tons daily—that is, about 200 tons per month. Beyond a doubt we shall be producing again at the rate of 300 tons next month, and notwithstanding the new and enormous fall in prices this production will leave a margin for profit. I have little hope, however, that before the end of this year the profits at Borello which we anticipate to make as soon as production reaches 300 tons monthly, may cover the loss sustained at this mine since the beginning of the year, in consequence of the sudden impoverishment of the mineral seam. I mentioned the fact that Boratella, which continues to be our best mine, was worked under exceptional circumstances. In the first place, the general downfall of which you are already informed took place. I may with some satisfaction point out that in consequence of appropriate works made and proper measures taken the effects of the same accident and equally violent accident compare very favourably with those which in 1872 brought this company to the verge of ruin. Only a few days suspension followed the downfall, and within a month after it the mine was again working at full swing. There is no doubt that the system which local circumstances force us to use at Boratella must leave this mine exposed to periodical downfalls, but no choice exists, and the pillar and stall system must be used, or else the mine worked at a loss; however, the strata underlying the mineral, on which strata the pillars transit the pressure of the roof, yield easily, and heave considerably in the stalls, till they cease to have sufficient consistency to resist said pressure. It then so happens that under the violence of the same the minerals left for columns splits and flies way in enormous pieces, and the foundations yielding on which the columns rest the same no more sustain efficiently the roof. It being totally impossible to prevent these accidents, and only possible to delay them with considerable outlay, by far the most advisable plan was to prepare the mine for same, and then with appropriate works to win the mineral which had been abandoned in the shape of columns, this amounting to about one-fifth and occasionally to one quarter of the total. What interfered with the regular working of Boratella was not so much the downfall, which only reduced the production of one month out of twelve, as the necessity to finish the works, calculated to save the mine from disastrous consequences, before the downfall was allowed to take place. However, an incomparably larger inconvenience was created by the change in the direction of the dip of our mineral stratum, to which I more than once called your attention in anticipation. At a considerable distance from the Winding shaft, and with only a small gradient, the mineral seam began fairly to dip away from said shaft. Had this been deepened and level courses carried from it at different levels to intersect the dipping seam, no sufficient height of the seam could have been gained for work to the rise. As it was, all the mineral had to be wheeled to the rise from the headings up to the level of the rails leading to the shaft, and the headings constantly progressing, the distance thus to be overcome increased monthly, weekly, daily. The consequence of this was that the number of hands required for leading constantly increased not only, but a certain given number being required to play between the headings and the rails, each for a given run, when a few hands were missing whole companies refused to work. Further, the wheelers having soon become aware of their vital importance to our work their pretensions became equal to their insubordination, and thus the rigid discipline which it took us years to establish in that wild country was gradually collapsing. The increase of the number of hands required to do the same work amounted to an increase of expense for leading the mineral. This increase is shown by the figures in my last report, which I need not repeat, except to point out that the increase of expense thus occasioned from the beginning to the end of the year, amounted to about 4½*d.* per wagon, which on the monthly extraction of about 9000 wagons amounted to 168*l.* 15*s.* of increased cost during December, this month, comparing with January of same year. This increase of cost, far from stopping at said limit, had necessarily and constantly to swell, and the moment was fast approaching when it would have absorbed all the reduced margin for profits left by the extraordinary fall in the prices of sulphur, and by the heavy claims existing on our profits in favour of the debentures of the Italian Sulphur Company. The disadvantage we had to contend with was considerably enhanced by the always increasing difficulty to procure more and more wheelers. The work being heavy, and the natural disposition of the men indolent, even high rate of salary would cease to induce them to undertake this work; and many have been the instances when other mines in the district stopping work made large number of hands idle, yet none could be enlisted to wheel at Boratella, while production at this mine was kept for want of hands far below the mark which the width of our fertile area could yield. However reluctant any one of the shareholders may be to let the system of investing profits in work be carried on any further, no one can blame us for having decided to remedy this ruinous state of things by setting up appropriate plant. In fact I have no hesitation whatever to state that if this course had not been adopted our chief mine—the basis of all our undertaking—would have soon been rendered passive. Indeed, the difficulties all emerging from the same cause were taking such proportions this year that the lengthy, costly, and difficult works, calculated to remedy the evil, had to be pushed on most energetically, regardless of accumulating all the outlay on a short lapse of time. I determined to adopt the endless chain system as being most adapted to our particular requirements. Presuming that some of you are not conversant with the nature of this work, while its vital importance to the main property of this company makes it a most interesting subject to us all, I may venture a brief description of same. A double road of rails is laid along appropriate galleries, and brought as near as possible to the frontage, being made susceptible of constant prolongation, and embracing with its branches all the different parts of the very extensive mine. Said galleries have to be exclusively dedicated to this use, and such portions of the road which penetrate within the worked-out portion of the mine must be particularly protected against damage from downfalls. All along these rails, that is, on roads dipping up or down, running on a level, straight or curved, a succession of endless chains are constantly in motion, which take in at the proper moment the necessary number of trams, lead them mechanically up and down, straight or round, loose them and take them again automatically, and finally land them at the bottom of the winding-shaft, where they are placed in the cages which bring them to bank. The motion to the endless chain is transmitted through the winding-shaft, from 600 ft. in height, which great difficulty had to be faced and was overcome, as a necessity imposed upon us by local circumstances, to the exclusion of the possibility of using compressed air, partially through want of necessary space in our shaft for the air pipes, and partially as more economical for such a short distance of transmission. The engine and boiler power is overground, and for the latter we have been able to utilise a portion of the plant made available through the stoppage of Polenta Mine. Although the works for the endless chain were put in hand in August, 1878, they could only be completed in May, 1879, and the whole system began to work satisfactorily only since June. By that time the cost of leading by hand had increased by other 2*d.* per wagon, the same being about 6¾*d.* over and above what it was at the beginning of 1878. The saving realised on the expenses for transport undergound, as shown last month before the endless chain was put to work, is 300*l.* per month; and as the expenses would have increased again in June, the actual saving for said month was 340*l.*, besides a full stop being put to any further increase of cost. The total expenditure for the endless chain having been in round ciphers 3200*l.*, the saving on past cost of wheeling pays for this plant in less than a year, while if the progressive increase of cost is taken into account the saving thus effected would amount to a much greater figure. Such being the case, it will no doubt be admitted that this expenditure was quite unavoidable, and that such profits as have been spent to obtain the very important result which I have pointed out have been dealt with to the very best of this company's interests. Although the difficulties which I endeavoured to lay before you made our working Boratella most difficult last year, we nevertheless brought to bank 94,954 tons of mineral at this mine, and produced 9425 tons of sulphur out of it. Further, had we only worked Boratella, notwithstanding said difficulties, we would have now a much larger sum to divide than what our balance-sheet shows. However, Polenta is now closed, and Borello once again is about to yield profits instead of absorbing a part of the earnings of Boratella, while at this latter mine a full stop has been put to the increase of the cost of production, which the constant increase of the cost of underground leading had occasioned, and a very considerable economy has been realised by establishing the endless chain system, which economy will (as I have shown with figures) pay for this plant in less than a year, after which period it will be available for net profits. In these conditions we might expect a considerable improvement of that part of our situation which is represented by profits available for division were it not for the enormous fall of the selling prices of sulphur. Refined sulphur is now quoted 4*l.* 18*s.* 6*d.*, which price certainly leaves only a small margin for profit, when we take into account the interests payable to the Halvan Sulphur Company, the royalties, and the necessity to cancel the current account debts created in former years with a view to pay for capital account expenditure, which it would have been unfair to charge on one single year's working expenses. All our future prosperity depends on the marketable prices of sulphur. The difference between said prices this day and about four years ago would make a difference of 20,000*l.* in our net profits per annum, which difference represents the profits of our undertaking. We passed successfully through a period when the solidity of our business was to be created; misfortunes had happened quite at the beginning of this company's existence which, had it not been for exceptional energy developed on behalf of our common interests, would have led us to utter ruin. The credit of the company was shaken, and yet want of capital to carry on business forced the company to resort to credit and to burden itself heavily. Years have elapsed since then, and not only our company met all its onerous engagements, but production was constantly increased, and all the property of the company was either developed or tested; all the supplementary establishments, indispensible for us, have been created; our produce has taken the first rank in the market, and was chosen amongst numerous competitors for the highest reward awarded for sulphur at all the international exhibitions. Our credit has been so firmly established that often as much as 4000*l.* are paid to us for sulphur not withdrawn for months, and our bankers allow us freely in case of temporary need of working capital to raise money by overdrawing our current account. This circumstance surely compares very favourably with the period when 10 per cent. fixed per annum plus the 2-7th of our total future profits had to be paid for money, which we can now obtain, as I said, on mere current account for usual banking interests. Credit, the great barometer of solidity, certainly proves that we are now a solid company; the market prices are against us, and against this no remedy can be found; we deplore that such be the case precisely when the extraordinary efforts made have cleared this company's situation and elicited the value of its property; the fruits of our exertions are thus snatched from us, let us hope, however, that this will only be for a short season. Prices on the market for sulphur, as for any other article, fluctuate constantly—sulphur was at its present price in Romagna some nine years ago—it has risen since and fallen again; I see no reason why it should not rise once more, and by so doing place us at once in a position to pay very satisfactory dividends.

The resolution for the adoption of the report and accounts was then put and carried, including the declaration of a dividend of 1*s.* per share, payable on and after Aug. 5.

On the motion of Mr. H. LABOUCHERE, seconded by a SHAREHOLDER, the retiring directors, Mr. F. Kossuth and Mr. C. Schiff, were re elected.

The auditors, Messrs. Carter and Clay, were re-appointed.

On the motion of a SHAREHOLDER a cordial vote of thanks was then passed to the Chairman, directors, and managing director.

The CHAIRMAN, in acknowledging the compliment, said the directors could not do more than they were doing. They were giving attention to all the most minute details—he would not speak so much of the directors in London—but the managing director, Mr. Kossuth, did devote all his energies, and all his time, and all his intelligence to such an extent that he was quite satisfied that the most critical investigation could not rip up the slightest thing that could be imputed either in the shape of neglect, in the shape of want of forsight, or in the shape of commercial inefficiency. Whoever was in his place would have nothing but words of praise for everything which the manager did. (Cheers.) If the practical result was not so satisfactory as they could wish it to be, be assurred that it touched much more the manager than the shareholders, for the shareholders had simply a question of money to consider, whereas the manager had besides the money (for he was a large shareholder) also the dissatisfaction of not seeing the immense efforts he made for the proper conduct of the business turn out so well as he was justified in expecting.

Mr. F. KOSSUTH thanked the Chairman for his kind expressions. He (Mr. Kossuth) certainly did devote all his energies, even beyond what he could reasonably be expected to do, to the welfare of this company. As he had stated the unfavourable state of the market was the main cause why they could not divide a

larger sum. The difference between the present price and the price four years ago made a difference of 20,000*l.* in the profits. He flattered himself that the mine had been worked as well as possible four years ago, and if there was any reduction to be made in the cost of production it could only be through new investments. One of those investments had been made, and if they had not made it he was perfectly certain that the mine would have had to be closed. Therefore, he should be sorry if the shareholders did not acknowledge that the position of the company was considerably improved, and it was a mere question of the market of sulphur whether the mine became prosperous or not. (Hear, hear.)

The meeting then broke up.

THE LOVELL MINE.

A general meeting of shareholders was held at the offices of the company, Gresham Buildings, Basinghall-street, on Wednesday (Mr. GEORGE P. BIDDER in the chair), when Mr. GRENVILLE SHARP (the secretary) read the notice convening the meeting and the minutes of the previous meeting. The statement of accounts for 28 weeks, ending May 24 last, showed a loss of 600*l.* 7*s.* 9*d.*, and a debit balance of 1187*l.* 6*s.* was read and passed. The agent's report was read, as follows:—

July 29.—Since your general meeting, held in January last, the driving of the 40, east of Howman shaft, on the south lode, has been continued, and is now over 20 fms. east of the said shaft. The lode on an average has been 9 ft. wide, all of which has paid for stamping. The lode in the present end is 8 ft. wide, worth 12*l.* per fathom; driving by six men, at 12*l.* per fathom. For your guidance I beg to say that this lode has in several instances been disturbed by granite, especially in the bottom of the level, which has been the means of the lode rising above the 40 a little; in the last week or 10 days we have had a decided change for the better; the lode is again dipping, and the character of the orestuff is such as we always had previous to having a good course of tin. Little or no stoping has been done in the back of this level for the last 28 weeks; consequently, we have a large quantity of tinstuff in reserve, and my candid opinion is by continuing operations here we shall ultimately have a profitable mine eastward.

Music Lode: This lode has been discovered during the last four months in examining the adit level, south of Howman shaft, and has been opened on east and west in the 10, or adit level, for 10 fms. in length, where we find it to be 12 ft. wide, and precisely of the same character as all other lodes seen in the mine at the shallow levels. We have a shaft open on it from surface to the 10, and are sinking below that level by four men, at 8*l.* per fathom; and, seeing it improves for tin as we sink, I recommend the number to be increased to six men, so as to get down to another level during the next three months. This being a parallel lode with the Howmand and engine lodes, and in virgin ground, is well worthy of your notice, especially as the shaft can be sunk at a small cost, and from all I can now see no extra expense will be required for any pumpwork.

Engine Lode: The intermediate level is driven west of engine-shaft 11 fms., and suspended. A rise has been put up in the back of this level 4 fms., through a lode 9 ft. wide, and worth 10*l.* per fathom, and has laid open a large amount of stoping ground. We have 10 men in this part of the mine rising and stoping at a profit. To carry on the mine with the same number of hands we now have employed the cost will be about 115*l.* per month, including bills, and a small improvement in one or two of our main points of operation would shortly enable us to meet that amount, or the returns could be increased by putting a few aditional hands to stope. This I do not recommend until the tin in market improves. Number of hands employed on tutwork, 20; tribute, 2; smith, 1; landing and filling, 1 man and 1 boy; spalling, 2 men; at stamps, 1 man, 3 boys, and 2 girls: total, 35.—J. PRISK.

A call of 5*s.* per share was made. A vote of thanks to the Chairman concluded the business of the meeting.

D'ERESBY CONSOLS MINING COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Gracechurch Buildings, Gracechurch-street, on Thursday,—Mr. J. Y. WATSON, F.G.S., in the chair.

Mr. C. B. PARRY (the secretary) read the notice convening the meeting. The accounts and the directors' and agents' reports were taken as read.

The directors' report was as follows:—

The accounts in the hands of the auditor, and which will be presented to the meeting, show a cash balance in hand of 276*9l.* 4*s.* 6*d.*, with no liability whatever beyond the current cost of the month. The chief point of operation in the mine has been to continue the adit level, upon which upwards of 15,000*l.* has been spent altogether, to get under and drain the Cobbler's lode, which down to the water level yielded large quantities of lead. The directors were in hopes that the lode would have been intersected before this meeting, but the hardness of the ground and the underlie of the lode have rendered the progress slower than anticipated. There are other and important points in the mine, two of which are being proved for the company without any expense to it, thus saving us that amount of expenditure. The Fuchuslas lode, one of the most promising in D'Eresby Mountain, is being worked by the latter mine up to the boundary of D'Eresby Consols at a good depth, and a shaft can be sunk dry upon it (D'Eresby Consols) when it is considered the proper time has arrived. The Gorse heading is being proved north and south of us by D'Eresby Mountain and Aberllyn. Owen's lode, which from appearances at surface seems to have yielded almost as much lead as the Cobbler's, can be reached and unwatered by a cross cut from the adit, and this will be done as soon as the Cobbler's lode has been cut. The late discovery at No. 5 in D'Eresby Mountain the directors consider has materially added to the value of this property. Mr. Edward Ashmead, the auditor, offers himself for election.

The following is the agents' report, dated July 25:—

July 25.—We beg to lay before you the following report of our operations since the last general meeting, together with the present position and future prospects of the mine. At surface we have made a high wall around the "tip" ground in the High Park, according to the conditions of the lease, measuring in length 236 yards. We have also cleared a drain at the mouth of the shallow adit, which was used by the former workers for draining off the surface water from the long run of workings in and about Owen's shaft, and which will serve for the same purpose when we commence operations in that place. Underground we have completed the tramway in the deep adit up to the present forebreast—a distance of 260 fathoms. This road is well made, and will last a great number of years without repairs. Our drivings have been confined chiefly to the extension of the deep adit level towards the Cobbler's lode (which has been worked on very extensively, and as far down as the water would admit), for the purpose of unwatering the old workings and reaching the course of lead left by the old shoemakers who made fortunes there, and were driven only by the influx of water. The object of keeping our operations so limited has been to prove first of all the value of this lode in depth, as the position of our surface plant and machinery will depend on where our principal drawing shaft will be, and this could not be decided till the Cobbler's lode was cut. We have extended this end in that direction 28 fms. 5 ft. 2 in., and it is now near the lode. Of course it is difficult to say with any degree of certainty how far we have yet to drive, as we cannot ascertain in what direction the lode dips, but we may cut in any dry. On what is called the Owen's lode we have driven at this level from 3 to 4 fms., which at present is rather small, and the containing rock rather hard. This is nothing which should discourage, as the end is not yet in the run of ore ground which was worked from surface, and we could scarcely expect lead unless it were in another run of ore ground. We have driven also about 7 fms. on the Gorse heading, and we had some nice stones of lead, but we did not continue it, for reasons above stated. There are six or seven lodes cut by driving up the deep adit level, but nothing of any importance has been done on either of them. The red lode is one of great importance. On the north end of the sett it has been worked on rather extensively, and a great deal of ore raised, but it appears that they could not proceed with the work on account of the water, there being then no adit level to drain it. There are now two adit levels—one from the D'Eresby Mountain side, which is from 20 to 25 fathoms deep, and the main adit of this mine, which is nearly 30 fathoms deep. This is the same lode as Nos. 1 and 2 adits at the D'Eresby Mountain are driven on, and is thought so highly of, not only by ourselves, but by everyone who has seen it. We do not see how a lode of such size and character, yielding such fine gossan, with large rocks of solid blende, and occasional bunches of pure galena, should fail to prove productive of good results as depth is attained. The advantages derived from the D'Eresby adits for the working of this lode are very great, as they will drain off the water for a very great depth, and no pumping machinery will be required for many years to come. Owen's lode has been exceedingly productive, and has been worked very extensively at surface, and that chiefly on tribute, the men drawing the water with barrels, which was very quick, and dressing and making the ore marketable; the water at length overcame them, and they were obliged to give up. A similar history is connected with the Cobbler's lode, which need not be repeated. There are several other smaller lodes in the sett which may be of great value where they intersect or form junctions with other lodes. In the working of this mine but little cost will be incurred beside that of labour, for no pumping will be required for many years, and all our dressing, however much, can be done without the aid of steam. Taking all these things into consideration, we see no reason why this mine should not, with a moderate price for produce, yield eventually a good profit to the proprietors.—JOHN ROBERTS, WM. SANDOE.

The following supplementary report, dated July 30, was read to the meeting:—

July 30.—The ground in the cross-cut appears to be a little easier for driving, and as the ground must be almost spent the lode cannot be far off. We are looking forward to the cutting of the Cobbler's lode with a great degree of hope and confidence, for should we discover the lode here as rich as the shoemakers had it at surface, and as far down as they worked it, we shall have realised our anticipations, and shall soon open up a mine of great value. But this is not the only important point we have, as we showed in our report of the 25th instant. The Fuchuslas lode, which is being worked in D'Eresby Mountain by the Nos. 1, 2, and 3 adits, runs through the entire length of the sett, and those adits will, on being extended, unwater this mine to a very great depth. There can be no question about the heading part of the great Gorse lode running through this sett, and the late discovery of lead at the No. 5 on this lode at D'Eresby Mountain adds considerably to the prospective value of D'Eresby Consols, in that it shows clearly that this lode improves as a deeper stratum is attained. The richest part of this lode is 50 fms. deeper than the deepest point yet seen in D'Eresby Consols, and if the lower stratum is more productive of lead in one lode it is reasonable to expect that it is in the others also. Referring to the discovery at the No. 5 adit at D'Eresby Mountain, perhaps it is the most important and the most valuable that has been made, not only in that mine but in any other in the district for the last century. As far as the clearing has yet gone it has fully verified the reports which have ever been in circulation among the old miners relative to the large body of lead being left there. The inference we wish to draw is this—if the old men's reports are true relative to the No. 5 at D'Eresby Mountain, why may they not be true relative to the Cobbler's and Owen's lodes at D'Eresby Consols, and if the lodes are most productive in depth in the former we have reason to believe that they are in the latter.—J. ROBERTS, W. SANDOE.

The CHAIRMAN said, although there were several very promising points in the mine, they had only so far been prosecuting the workings to reach the Cobbler's lode, for reasons mentioned in the directors' report. It was expected that a good lode would soon be intersected, judging from the favourable character of the supplementary report which had just been read. The great discovery which had recently been made at the D'Eresby Mountain Mine showed that all the statements of the old men had been correct there. The same lode ran through both the properties, and it was only reasonable to suppose that the old reports with respect to the Cobbler's and Owen's lodes at D'Eresby Consols would also be verified. He thought the prospects of the mine were very encouraging. He then moved the adoption of the report and accounts.—Mr. DAUKES seconded the motion.

A short conversation ensued with regard to the prospects of the lead trade, and the motion was then carried unanimously.

On the motion of the CHAIRMAN, seconded by Mr. WILSON, Mr. Edward Ashmead was re-appointed auditor.

The meeting then closed with the usual compliment to the Chairman.

DOLCOATH MINING COMPANY.

A three-monthly meeting of adventurers was held at the mine on Monday, the Rev. W. W. BUTLIN presiding. The accounts showed the total costs for the twelve weeks to be 11,755*l.* 7*s.* 5*d.*, which included 4036*l.* 16*s.* 7*d.* for merchants' bills. On the credit side there was for tin ore sold (378 tons 11 cwts.), 13,776*l.* 6*s.* 3*d.*; arsenic, 129*l.* 12*s.* 8*d.*; total, 13,905*l.* 18*s.* 11*d.*, which, after deducting Mr. G. L. Basset's dues, 1-20th, 695*l.* 5*s.* 11*d.*, left 13,210*l.* 13*s.*, to which was added 12*l.* 13*s.* 3*d.* for extra carriage of tin, making a total of 13,233*l.* 6*s.* 3*d.*, and leaving a credit balance of 1467*l.* 18*s.* 10*d.* Out of this profit a dividend of 1074*l.* (5*s.* per share) was declared, which left a credit balance in favour of the mine of 1552*l.* 11*s.* The following is the agents' report:—

Since the last account we have fixed the new skip-road in the engine-shaft from the surface to the bottom of the mine, which is working very satisfactorily. The engine-shaft is sunk 9 ft. below the 352. The lode is worth for the length of the shaft (12 feet) 100*l.* per fathom. The 352, east of engine-shaft, is worth 40*l.* per fathom. The 352, west of engine-shaft, is not of much value for the part we are driving on, but we believe the principal part of the lode is standing further south. Both these ends are being driven by boring machines, and we have now opened at this level a length of 25 fms. The new east shaft, sinking under the 338, is worth for 9 ft. long 40*l.* per fathom. At the 338, east of new east, we have found that the principal part of the lode is standing to the south of the level; this part we are now cutting into, but have not yet ascertained its full size; this is worth for 6 ft. wide 25*l.* per fathom. The old sump shaft under the 338 is worth for 9 ft. long 18*l.* per fathom. The 338, west of old sump, is worth 15*l.* per fathom. The winze under the 326, just before this end is sunk 4½ fathoms, and is worth for 9 ft. long 40*l.* per fathom. The 326, east of new east, is worth 10*l.* per fathom. Harriett's shaft is sunk 18 fathoms below the 275, but the lode is standing to the south. We are rising over the 314 by the boring-machine towards this shaft, and are now up 7½ fathoms above the level. Man engine-shaft is sunk 2¼ fathoms under the 275; the lode is worth for 9 ft. long 20*l.* per fathom. The 275, west of man engine-shaft, is worth 15*l.* per fathom. The 264, west of man engine shaft, is worth 12*l.* per fathom. Stray Park shaft, sinking under the 280, is producing a little tin.—South Lode: The 290, west of cross cut, is worth 20*l.* per fathom. The 266 cross-cut south is approaching the place were we expect to meet with the south lode, and we shall probably intersect it very shortly. We have commenced a cross-cut in the 254 fm. level for the purpose of intersecting this lode.

Capt. JOSIAH THOMAS, after reading the report, remarked that they had done a good deal of work in the mine during the last twelve weeks, and considering all the circumstances he thought the results of the three months' working had been very satisfactory. It took them about four weeks to put in the new skiproad from the surface to the 352, in which they had 130 men employed, and as that was the principal drawing shaft the hindrance was, of course, considerable. But, notwithstanding they were hindered for four weeks out of the twelve, they had succeeded in raising and selling a larger quantity of tin during the past quarter than in any former period. (Applause.) The price of tin this quarter had been, he believed, just exactly 2*l.* 5*s.* per ton less on an average than on the previous twelve weeks. If this had not been the case the profit shown at to days meeting would have been about 2200*l.* As it was they had made a profit of between 1400*l.* and 1500*l.* which he thought must be considered satisfactory by all the shareholders. They were working three points in the mine with boring machinery. The 352, east and west of the engine shaft, was being worked by a "Champion" machine, to the proprietors of which they had set a contract to drive 100 fms., and the rise over the 314, towards Harriett's shaft, was being done by the Barrow Rock Drill, which was the first boring machine introduced into the mine. He was not aware that boring machines had been used in the county for rising, except at South Crofty, where it was carried on for a short period, but in Dolcoath they were getting on satisfactorily indeed with it. They were up now 7½ fms., and with the aid of machinery he thought they could rise 4 or 5 fms. a month, whereas they could only sink 9 or 10 ft. with twelve men. There was a time when scarcely anyone believed in boring machinery, but he believed that in most of the mines the agents were now turning their attention to it, and he believed the time was not far distant when anyone would think of working in Cornish mines without the use of boring machinery. (Applause). Since the last meeting they had had to put the Factory Act in operation in the mine, and the effect was that all children engaged in the mine from ten to fourteen years of age would either have to be dismissed altogether or else work only half time. They had carried out the Act as requested by the inspector, and which they could not resist, but several of the children had since returned to work on half time, working one day and attending school the next. The Act was so strict in its operation that unless children attended school a certain number of times during one week they could not be employed during the next week. Whether any modification of this could be made by applying to the chief inspector or Home Secretary he was not aware. The mine would not be affected so much by this as some of the parents, and he was afraid it would affect some of them very seriously, and the result of it would be, he supposed, they would have to come back on the rates. It would be very much better for the parents, he thought, if the age could be altered—say, from ten to twelve, instead of fourteen. (Hear, hear.) The lode in the engine-shaft was still looking exceedingly well; they had cut a plot, and were now sinking in the ordinary way. They had been talking about having a boring machine in the shaft, but as yet it had not been decided upon. Perhaps they would wait a little while before they did it, as they would have to make some extra outlay in buying new machinery.

The CHAIRMAN proposed the adoption of the accounts and agents' report, which was seconded by Capt. W. THOMAS (New Cooks Kitchen), and carried unanimously.—Capt. JOSIAH THOMAS stated that since their lest meeting they had paid 5000*l.* to the receivers of the old Cornish Bank, and they owed their present bankers, 1700*l.* If thought proper they could have a sale of their stocked tin, and by the end of the year clear off the whole of the bank debt. (Applause). This terminated the business.

Subsequently the shareholders dined together in the account house. After the loyal toasts had been disposed of the CHAIRMAN proposed "Prosperity to Dolcoath Mine," and remarked that he thought the account presented that day was a remarkable proof of the prosperity of the mine. Although they had been engaged four weeks in putting in a new skip road, on which 130 persons were engaged, they had been able to raise 378 tons of tin, and to declare a dividend of 5*s.* per share. (Applause). They had gone to a considerable depth in Dolcoath, and in sinking 1½ fms. below the 352 level in the bottom of the mine they found the lode worth 100*l.* per fathom, showing that the mine continued rich in depth. (Applause.) All this showed they were progressing and going on well. It was really wonderful to know what a vast deal of tin was being used while there was a falling off in other commodities. He believed that in 1876 the production of tin in Cornwall was 12,637 tons, and in 1878 it was 14,220 tons, or about 16,000 tons. With regard to the quantity of tin from Australia there was a decrease in the six months ending June 30 of 1270 tons as compared with the corresponding six months last year. And the production in Cornwall was all the more remarkable when they remembered what a falling off there was in the number of persons employed in the tin mines. Between 1877 and 1878 there was a decrease in this respect of 3336 persons, and yet they had been able to raise more tin. He thought they were greatly indebted for the valuable improvements in the mine to the agents.

Capt. JOSIAH THOMAS, whose name was coupled with the toast, suitably replied. The proceedings then terminated.—*Western Daily Mercury.*

[For remainder of Meetings, see to-day's Journal.]

NEW PROCESSES IN METALLURGY.

Until within the last twenty or thirty years metallurgy, though perhaps the most important of the arts, was one the methods of which most resembled groping in the dark. The Hebrew Scriptures give no information as to how Tubal-Cain became in the quaint Eastern idiom the "father" of those who worked in metals, nor does Greek or Roman tradition tell us how Vulcan rose to the same pre-eminence. But there is the strongest reason for believing that the earliest metallurgical facts were picked up by accident, and that to what is called good luck was due the majority of the improvements made before the present generation.

Assuming that Cornwall was the Cassiterides of the ancients, a tradition of the earliest production of tin well illustrates what we are referring to. Tinstone, or common tin ore, resembles ordinary pebbles in everything except weight, and nothing is more likely than that fragments of it should be used in a wood fire to support the cooking utensil of some party of travellers or merchants. That metallic tin should result from this is much more certain than that glass should be produced from the similar building of a fire with lumps of "natron" to support the kettle, and consequently the tradition as to the origin of tin seems to us far more likely than the recognised legend as to the invention of glass.

But with regard to the less easily smelted metals neither tradition nor theory help us much, and we can only reason from analogy that accident had as much to do with the inception of ancient methods as experience with their improvement. But with advancing civilisation and extending commerce the practice of smelting became improved in two directions. First, the amount of waste in the scoriæ was so much reduced that modern slags will never be worked over again by our posterity as we work those of our forefathers. Secondly, economy of fuel and labour came to be diligently studied. Modern metallurgists, therefore, found it necessary to consider carefully all the conditions of their work, and by classifying their facts they advanced their art to the dignity of a science.

No better illustration can be quoted of the way in which modern methods are devised than the history of the Bessemer process, which depends on the fact that cast-iron contains a large quantity of carbon, and wrought-iron little or none. The melted pig is, therefore, subjected to the action of a blast of air, which consumes the carbon and leaves the iron. In order to produce steel from this a dose of Mushets' spiegeleisen, containing a known proportion of carbon, is added, and the thing is done. This seems simple enough, and indeed is so, but twenty years ago it was a novelty and a heresy. The noteworthy featnre of the invention was its careful thinking out beforehand, and then the practical corroboration of Bessemer's theories.

The next development of the process was similarly effected by Messrs. Gilchrist and Thomas, who collected facts relating to the inability of the Bessemer blast to burn out phosphorus as well as carbon. They came to the conclusion that the acid nature of the lining was in fault, and by altering this, adding basic fluxes, and lengthening the "blow," they have effected an improvement in the process which promises to increase its application tenfold by rendering Cleveland and Lorraine pigs available for the steelmaker.

Yet another instance of careful preliminary thought expended with success upon a somewhat similar process is found in a method devised by Mr. John Hollway. Carbon, though the usual combustible in smelting operations, is not the only one. There is an immense class of ores called pyrites, containing sulphur in large quantities, and smaller proportions of the more valuable metals, including silver and gold. By ordinary methods of treatment, especially in copper smelting, most of these constituents are lost, a fact which, in these ultra-economical days, is a glaring anomaly.

Now, Mr. Hollway's plan is to make these ores supply their own fuel, so to speak, and to conduct his operations so that he does not lose sight of a single product. The complexity of pyritous minerals renders this necessary, for it is usually easier to say what is than what is not present in them. The first experiments were conducted in a Bessemer converter, but fixed furnaces, with attached condensers, are more suitable. On melting a small charge of pyrites to start the operation, and feeding the furnaces with cold mineral, maintaining a powerful blast, a tremendous heat is produced by the combustion of part of the sulphur and iron, and a variety of products are secured.

Beginning with those that fly up the chimney, and are condensed, there are sulphurous acid, sulphur, arsenic, zinc, antimony, and lead. Flowing from the furnace is a molten mass of what is called regulus, containing copper, cobalt, nickel, silver, and gold. This settles in the lower part of the receivers, and is covered with a slag composed mainly of silicate of iron.

As we are not writing for metallurgists, and have no wish to bewilder our readers, we forbear quoting the very numerous technical advantages possessed by this latest development of a world-renowned process. Everyone, however, can appreciate the retention of vast quantities of precious metals usually thrown away as waste, and the avoidance of those sulphurous fumes which desolate large tracts of country around most places where pyrites is treated. Anything further would involve an amount of thought which we should hardly expect a cursory reader to bestow, though for those commercially inclined we should like to point out in pounds, shillings, and pence what a single factory can, under the present system, afford to waste.

Taking two metals commonly occurring in small quantities—nickel, 0·85 per cent., and gold 110 grains per ton, an establishment getting through 12,000 tons of pyrites annually would lose by neglecting these 41,000*l.* worth of nickel and nearly 10,000*l* worth of gold. We are within the mark when we say that a process which effects these and other economies is well worthy the attention of those interested, principally American miners. Have they not in America many sulphuret veins, rich in gold and silver, and from which the precious metals are almost entirely lost, because of the deficiency of all the processes put in operation until now. Let them try the Hollway process.—L. S., Mining Engineer.

— *American Register*, July 26.

COPPER.—The following figures refer to the exports of wrought copper for the first five months of the years named:—1879, 118,990 tons; value, 426,023*l.*; average price per ton, 3*l.* 11*s.*—1878, 94,708 tons; value, 379,212*l.*; average price per ton, 4*l.*—1877, 93,607 tons; value, 420,374*l.*; average price per ton, 4*l.* 10*s.*

THE SKIP-ROADS AT DOLCOATH AND EAST POOL.—Dolcoath is now the deepest mine in the county, and it is stated that the new skip-road will carry nearly two tons of stuff—in point of fact, about 35 cwts.—and will bring up nearly three loads an hour—22 in the eight hours, or nearly 40 tons in that period. The double skip at East Pool, which loads one ton and runs eight times an hour, will bring up 64 tons in the eight hours, but then there is a very great difference between the depths of the two mines. There seems to be no doubt that skip-roads have solved what was regarded as one of the most difficult problems in the conduct of mining enterprise here, drawing the stuff cheaply and efficiently as the mines get deeper and deeper.—*West Briton.*

CHEMICALS, MINERALS, AND METALS.—Messrs. J. Berger Spence & Co. (July 26)—Alum: Loose lump, 6*l.* 2*s.* 6*d.* to 6*l.* 5*s.*; ground, 6*l.* 15*s.*—Arsenic: Best white powdered, 9*l.* 15*s.*—Borax: Refined English, 36*l.*—Copperas: Green, 50*s.* 0*d.*; white, 8*l.* 15*s.*—Copper: Sulphate, 18*l.* 5*s.* to 18*l.* 10*s.*—Nitrate of Lead: 30*l.* 0*s.*—Saltpetre: Refined English, 23*l.* 15*s.* to 25*l.*—Sulphate of Zinc, 9*l.* 0*s.* 0*d.*—Sulphur: Roll, 8*l.* 10*s.*; flowers, 10*l.* 10*s.*—Tin crystals, 5¾*d.* per lb.—White Lead, 20*l.*—Barytes: Carbonate, 5*l.*—Brimstone: Best thirds, 8*l.* 2*s.* 6*d.*—China Clay, 38*s.*—Oxide of Zinc, 22*l.* 10*s.*—Talc, 8*l.*—Umber, 70*s.*—Charcoal: Best stick, 4½*d.* per bushel; field burnt, 6*d.*—Globe Steam-Boiler Powder, 16*s.* per cwt.—Naphtha: Miscible, 60 per cent., 4*s.* 4*d.*

HOLLOWAY'S OINTMENT AND PILLS—DEBILITATED CONSTITUTIONS.—When climate, age, or hardships have undermined the health, skin diseases are prone to arise and augment the existing weakness. Holloway's medicaments daily prove most serviceable, even under the most untoward circumstances. This well-known and highly-esteemed unguent possesses the finest balsamic virtues, which soothe and heal without inflaming or irritating the most tender skin or most sensitive sore. Holloway's ointment and pills are infallible for curing bad legs, varicose veins, swelled ankles, erysipelas, scaly skin, and every variety of skin disease. Over all these disorders Holloway's remedies exert a quick and favourable action, and, where cure is possible, gradually but certainly arrive at that consummation. They are invaluable in the cure of scrofula and scurvy.

British and Foreign Safety Fuse Company,

REDRUTH, CORNWALL,

MANUFACTURERS OF

SAFETY FUSE,

FOR MINING AND QUARRYING PURPOSES.

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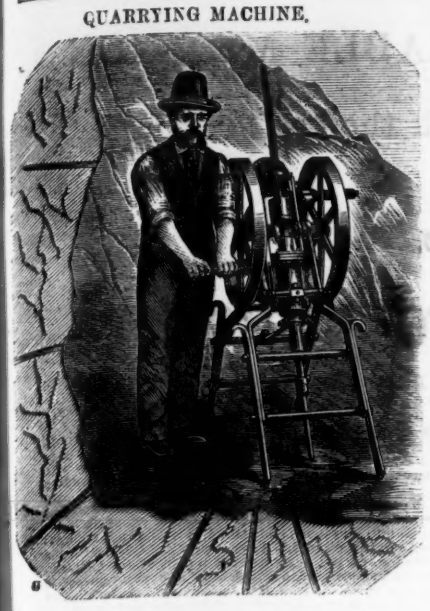
WISHAW, SCOTLAND,

MANUFACTURERS OF ALL KINDS OF

Cut and Lath Nails; Joiners', Moulders', and Flooring Brads; Copper and Zinc Cut Nails; Colliery Plate Nails; Washers, Boiler Plates, Tube Strips, Sheet Iron for Galvanising and other purposes.

PRICE LIST ON APPLICATION.

QUARRYING MACHINE.



HAND-POWER ROCK DRILL COMPANY, LIMITED.

FOR THE

LATEST TESTIMONIALS AND REPORTS OF PRACTICAL WORK

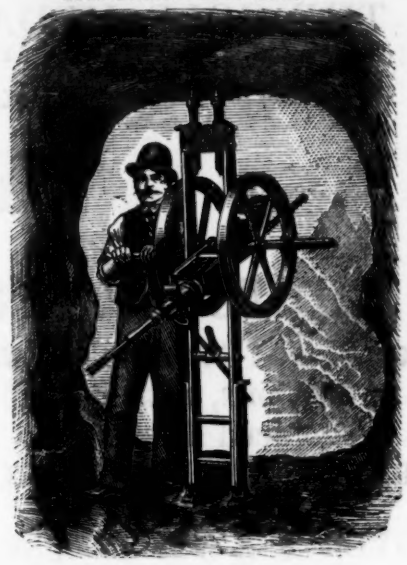
APPLY TO

T. B. JORDAN, SON, & MEIHE,

63, QUEEN VICTORIA STREET,

LONDON, E.C.

TUNNELLING MACHINE.



JORDAN'S PATENT "DEAD-BLOW" HAND-POWER ROCK DRILL.

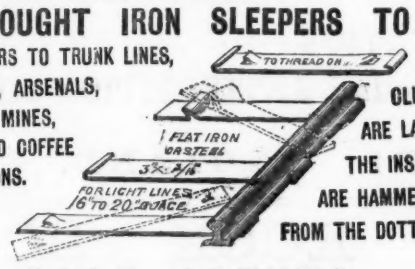
PATENT GOLD REDUCING MACHINERY AND GENERAL MINING PLANT.

PRICES COMPLETE, £55 TO £70.

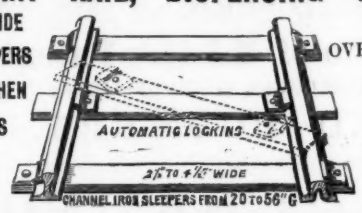
A NARROW GAUGE RAILWAY —LEGRAND'S PATENT— COMPLETE IN TWO PARTS, From £250 per Mile.

WROUGHT IRON SLEEPERS TO FIT ANY RAIL, DISPENSING WITH SPIKES AND ALL LOOSE PIECES.

FOR FEEDERS TO TRUNK LINES, QUAYSIDES, ARSENALS, FORESTS, MINES, SUGAR AND COFFEE PLANTATIONS.



THE OUTSIDE CLIPPING SLEEPERS ARE LAID FIRST, THEN THE INSIDE SLEEPERS ARE HAMMERED UP AS FROM THE DOTTED LINES.



OVER 1000 MILES OF LINE ARE NOW LAID WITH THESE SLEEPERS.

CHANNEL IRON SLEEPERS
FOR SINGLE HEADED RAIL WITH OUTSIDE BEARING
2½ TO 4½ WIDE
WEDGE KEY
Do—Do— WITHOUT OUTSIDE BEARING
Do—Do— TO THREAD ON — NO KEY

FOR CONTRACTORS, FORTIFICATIONS, BRICKYARDS, EARTHWORKS, QUARRIES.

SOLE AGENTS, SHAW BROTHERS, BIRMINGHAM.

DRAWINGS & PARTICULARS ON APPLICATION. TO SAVE TIME, PLEASE GIVE GAUGE, WEIGHT OF RAIL AND KIND OF TRAFFIC.

MAY AND MOUNTAIN,

BIRMINGHAM,

Engineers, Millwrights, Ironfounders, Coppersmiths, and Boiler Makers.

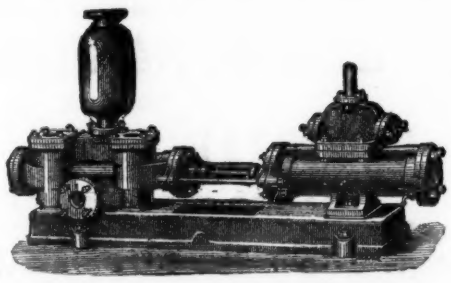
SOLE MANUFACTURERS OF

IMPROVED VERTICAL DOUBLE-ACTING

STEAM PUMPS,

MADE IN ALL SIZES AND COMBINATIONS.

GOLEBROOK'S PATENT STEAM PUMP.



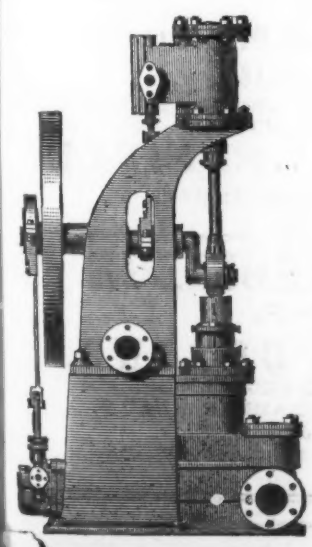
PRICES OF A FEW LEADING SIZES.

Steam cylinder.	Water cylinder.	Stroke.	Gallons per hour.	Price.
3	1¼	12	720	£16
4	2	18	1,260	19
4	4	18	5,040	25
6	4	18	4,280	33
6	6	18	9,660	41
8	6	18	7,920	50
10	8	18	12,060	80

Reliable and Economical—Short Pistons and Long Strokes—Slide Valve worked by Steam alone, without Tappets, Levers, or Valves.

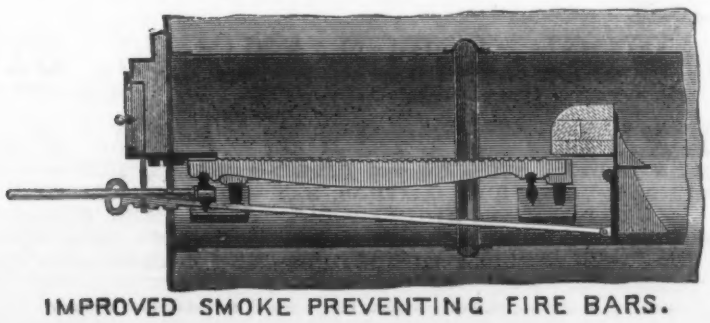
Adapted for all purposes and to all circumstances.

PRICES ON APPLICATION.



TORKINGTON & HEY'S PATENT LUBRICATORS,

Entirely Self-acting. Flow of Grease regulated by the Steam. Perfect Lubrication. Greatest possible Economy.

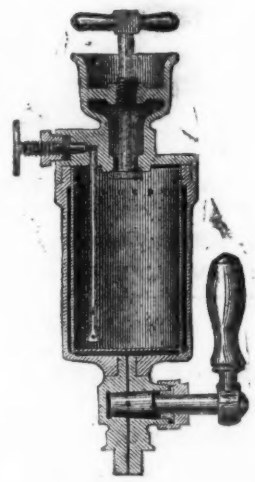


IMPROVED SMOKE PREVENTING FIRE BARS.

TO SUIT ANY FLUE OR FURNACE.

PRICES ON APPLICATION.

TORKINGTON AND HEY'S PATENT.



PRICES OF LUBRICATORS.

No.	Horse-power.	Price.
1	Agricultural Engines...	7s. 6d.
2		10 0
3	5 to 7	20 0
4	7 10	25 0
5	10 20	30 0
6	20 30	37 6
7	30 50	47 6
8	50 70	60 0
9	70 100	85 0
10	100 200	110 0

At the PARIS EXHIBITION the Jurors have Awarded

THE GOLD MEDAL, THE SILVER MEDAL, AND HONOURABLE MENTION

FOR MY LATEST PATENTED STONE BREAKERS AND ORE CRUSHERS.

Stones broken equal, and Ores better, than by hand, at one-tenth the cost.

H. R. MARSDEN,

ORIGINAL PATENTEE AND SOLE MAKER OF BLAKE'S

Improved Patent Stone Breakers & Ore Crushers.

New Patent Reversible Jaws, in Sections, with Patent Faced Backs.

NEW PATENT ADJUSTABLE TOGGLES.

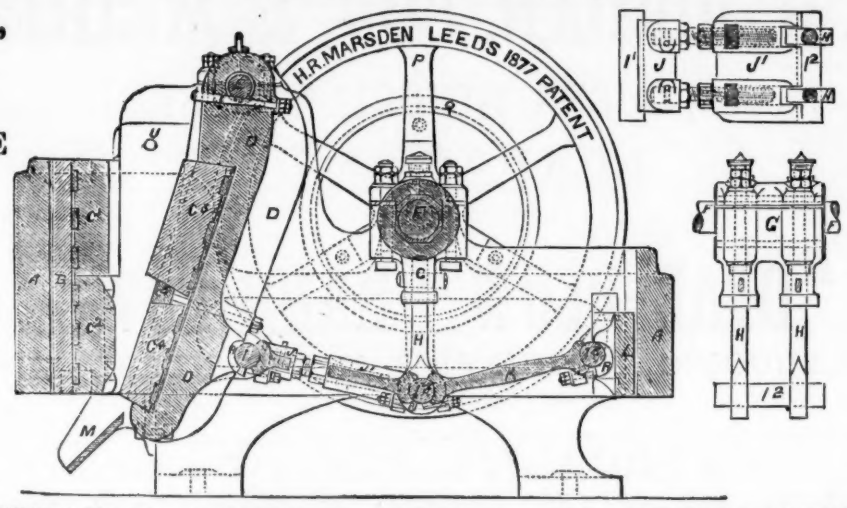
OVER 2500 IN USE.

New Patent Draw-back Motion.

NEW PATENT STEEL TOGGLE BEARINGS.

70

PRIZE MEDALS.



READ THIS—

Wharthole Lime Works, Maryport, Whitehaven, November 7, 1873.

H. E. MARSDEN, Esq., Soho Foundry, Meadow-lane, Leeds.

DEAR SIR,—The machine I have in use is one of the large size, 24 in. by 12 in. The quantity we are breaking daily with this one machine is 250 tons, the jaw being set to break to a size of 2¼ in. We have, however, frequently broken over 300 tons per day of ten hours, and on several occasions over 360 tons during the same period. The stone we break is the blue mountain limestone, and is used as a flux in the various ironworks in this district. We have now had this machine in daily use for over two years without repairs of any kind, and have never had occasion to complain of any inconvenience in using the machine. I hope the one you are now making for me may do its work equally well. The cost—INCLUDING ENGINE-POWER, COALS, ENGINEMAN, FEEDING, and all EXPENSES OF EVERY KIND—is just 3d. per ton. Should any of your friends feel desirous of seeing one of your machines at work, I shall have much pleasure in showing the one alluded to.

I am, dear Sir, yours very truly,
WILLIAM MILLER.

AND THIS—

Wharthole Lime Works, Aspatria, Cumberland, July 11th, 1878.

H. R. MARSDEN, Esq., Soho Foundry, Leeds.

DEAR SIR,—We are in receipt of your letter of 4th inst. I may just state that the stone breaker above named has been under my personal superintendence since its erection, and I have no hesitation in saying that it is as good now as it was five years ago.

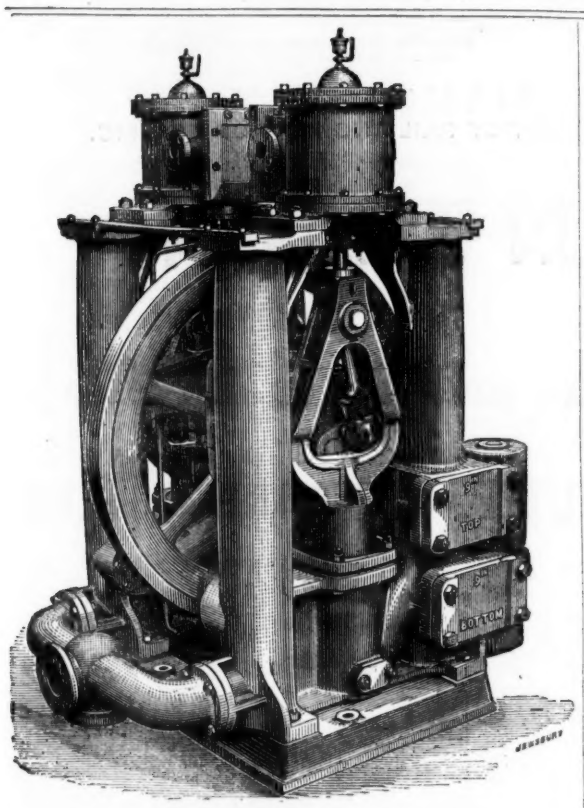
I am, dear Sir, yours faithfully,
FRANCIS GOULD.

GREATLY REDUCED PRICES ON APPLICATION.

ALL BEARINGS are renewable, and made of H.R.M.'s Patent Compound ANTIFRICTION METAL.

CATALOGUES, TESTIMONIALS, &c.

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.



STEAM PUMPS for COLLIERY PURPOSES, specially adapted for Forcing Water any height; also for Sinking; and for Feeding Boilers.

JOHN CAMERON has made over SIX THOUSAND.

WORKS: OLDFIELD ROAD, SALFORD, MANCHESTER.

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ASBESTOS CEMENT,
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THE SOUTH WALES EVENING TELEGRAM
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MINE AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIARUBBER HOSE, TESTED IRON PIPES, &c.

Air-Compressing Machinery,

Simple, strong, and giving most excellent results, and
ELECTRIC BLASTING APPARATUS.

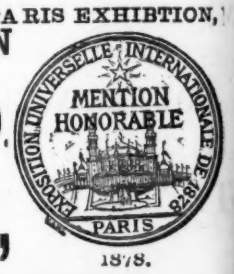
Full particulars of rapid and economical work effected by this machinery, on application.

R. H. HARRIS, late
ULLATHORNE AND CO., Mechanical and Consulting Engineers,
63, QUEEN VICTORIA STREET, LONDON, E.C.

PARIS EXHIBITION, 1878.

HONOURABLE MENTION
Awarded to
SALMON, BARNES, & CO.
FOR THE PATENT
ROANHEAD ROCK DRILL,
AND THE HIGHEST AWARD FOR
IRON AND WOOD REVOLVING SHUTTERS,
Worked by their PATENT BALANCE-WEIGHT MOTION.

PARIS EXHIBITION, 1878.



Canal Head Foundry and Engineering Works, Ulverston,
LANCASHIRE.

GOLD MEDAL AWARDED, PARIS EXHIBITION, 1878.

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MANUFACTURERS OF
MINING STEEL of every description.
CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL
MINING TOOLS & FILES of superior quality.
EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.
SHEAF WORKS AND SPRING WORKS, SHEFFIELD.
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J. WOOD ASTON AND CO., STOURBRIDGE
(WORKS AND OFFICES ADJOINING CRADLEY STATION),
Manufacturers of
CRANE, INCLINE, AND PIT CHAINS,
Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.
Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.
STOURBRIDGE FIRE BRICKS AND CLAY.

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors) at their offices, 26, FLEET STREET, E.C., where all communications are requested to be addressed.—*August 2, 1879.*